


MYP by Concept
4 & 5

Design

Lenny Dutton



Boost

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MYP *by Concept*
4&5

Design

Lenny Dutton
Series editor: Paul Morris

Sample



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How to use this book

Welcome to Hodder Education's *MYP by Concept* Series! Each chapter is designed to lead you through an *inquiry* into the concepts of design, and how they interact in real-life global contexts.

The *Statement of Inquiry* provides the framework for this inquiry, and the *Inquiry questions* then lead us through the exploration as they are developed through each chapter.

KEY WORDS

Key words are included to give you access to vocabulary for the topic. **Glossary terms** are highlighted, **search terms** are given to encourage independent learning and research skills and, where applicable, **visible thinking routines** are given to encourage their use.

As you explore, activities suggest ways to learn through action.

■ ATL

Activities are designed to develop your *Approaches to Learning* (ATL) skills.

◆ Assessment opportunities in this chapter:

Some activities are *formative* as they allow you to practise certain parts of the MYP Design Assessment Objectives. Other activities can be used by you or your teachers to assess your achievement *summatively* against all parts of an assessment objective.



Key Approaches to Learning skills for MYP Design are highlighted whenever we encounter them.

Each chapter is framed with a *key concept*, *related concept* and set in a *global context*.



Definitions are included for important terms and information boxes are included to give background information, more detail and explanation.

EXTENSION

Extension activities allow you to explore a topic further.

Design situation

You are presented with a design situation, from which you identify a problem that needs to be solved. You analyse the need for a solution and conduct an inquiry into the nature of the problem.



● We will reflect on this learner profile attribute:

● Inquirers

In this unit you will have a lot of freedom to explore a UN Global Goal of your choosing. Questioning will help you to dig deep to really understand the problems related to that goal.

◆ Assessment opportunities in this chapter:

- ◆ Criterion A: Inquiring and analysing
- ◆ Criterion B: Developing ideas
- ◆ Criterion C: Creating the solution
- ◆ Criterion D: Evaluating

▼ Links to: Individuals and societies

In your Individuals and societies class you might explore the history and purpose of the United Nations and may even focus on the UN's Global Goals for Sustainable Development. Your Individuals and societies teachers might even choose to connect with this chapter to make an interdisciplinary unit.

In 2015, the United Nations launched 17 interconnected goals, which it wants all nations and all people to work towards achieving by the year 2030. These goals replaced their Millennium Development Goals and are called the UN's Sustainable Development Goals, usually just named the UN's 'Global Goals'. They are quite broad and include 'No Poverty', 'Zero Hunger', 'Gender Equality' and 'Life Below Water'. Each goal is broken down into 8–12 smaller targets; for example, 'Gender Equality' has nine targets, including 'end discrimination against women and girls', 'eliminate forced marriages and genital mutilation' and 'end violence and exploitation of women and girls'.

At first glance it might look like these goals are aimed at, and need to be tackled by, large organizations and governments. However, we all play a role, including designers. In this chapter you will pick a goal that you are passionate about and use your design skills to do something about that goal.

This chapter provides many flexible options for you to choose from. You might end up designing anything from an app to a necklace. Make sure you consider your skills and the materials available to you.

1 How can designers help us achieve the UN's Global Goals?

3

You are prompted to consider your conceptual understanding in a variety of activities throughout each chapter.

We have incorporated Visible Thinking – ideas, framework, protocol and thinking routines – from Project Zero at the Harvard Graduate School of Education into many of our activities.

▼ Links to:

Like any other subject, Design is just one part of our bigger picture of the world. Links to other subjects are discussed.

● We will reflect on this learner profile attribute ...

- Each chapter has an *IB learner profile* attribute as its theme, and you are encouraged to reflect on these too.

! Take action

! Guidance is given throughout the book about how to apply your knowledge of the design process to real-life situations. While the book provides many opportunities to apply the knowledge you have learnt in practical ways, you must be an active part in this process. Activities help you to explain the ways in which design can be applied and used, and also to discuss and evaluate the implications of using the principles of design to address specific issues. This should give you a better understanding of the issues facing designers in the twenty-first century. By engaging in these activities, you will also learn the value of communicating clearly and precisely.

MEET THE DESIGNER

These boxes will introduce you to significant people in the field of design, providing background and short biographies.

Finally, at the end of the chapter you are asked to reflect back on what you have learnt with our *Reflection table*, maybe to think of new questions brought to light by your learning.

Use this table to reflect on your own learning in this chapter.

Questions we asked	Answers we found	Any further questions now?			
Factual					
Conceptual					
Debatable					
Approaches to learning you used in this chapter	Description – what new skills did you learn?	How well did you master the skills?			
		Novice	Learner	Practitioner	Expert
Learner profile attribute	Reflect on the importance of the attribute for your learning in this chapter.				

1

How can designers help us achieve the UN's Global Goals?

- What role can designers play in helping us reach the UN's **Global Goals** for **sustainable development**?

We need to make **changes** to become more sustainable.

CONSIDER THESE QUESTIONS:

Factual:

What are the United Nations' Global Goals?
What are the aims of the UN's Global Goals?
What can I do? What do you want the world to look like in 2030?

Conceptual:

How can designers help us meet the UN's Global Goals? Other than designers, who else plays an important role in helping us meet the UN's Global Goals?

Debatable:

Can we fulfil any of the goals without the support of all governments/countries? How might sustainability limit change?

Now **share** and **compare** your thoughts and ideas with your partner or with the whole class.

KEY WORDS

Global Goals United Nations sustainability



■ **Figure 1.1** The UN's Global Goals for Sustainable Development

○ IN THIS CHAPTER, WE WILL ...

- **find out** about the United Nations' Global Goals for sustainable development
- **explore** how different people and organizations are working towards these goals
- **take action** by choosing a meaningful goal.

■ These Approaches to Learning (ATL) skills will be useful ...

- | | |
|------------------------|-------------------------------|
| ■ Communication skills | ■ Information literacy skills |
| ■ Collaboration skills | ■ Critical-thinking skills |
| ■ Organization skills | ■ Creative-thinking skills |
| ■ Reflection skills | |



● We will reflect on this learner profile attribute:

● Inquirers

In this unit you will have a lot of freedom to explore a UN Global Goal of your choosing. Questioning will help you to dig deep to really understand the problems related to that goal.

◆ Assessment opportunities in this chapter:

- ◆ **Criterion A:** Inquiring and analysing
- ◆ **Criterion B:** Developing ideas
- ◆ **Criterion C:** Creating the solution
- ◆ **Criterion D:** Evaluating

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At first glance it might look like these goals are aimed at, and need to be tackled by, large organizations and governments. However, we all play a role, including designers. In this chapter you will pick a goal that you are passionate about and use your design skills to do something about that goal.

This chapter provides many flexible options for you to choose from. You might end up designing anything from an app to a necklace. Make sure you consider your skills and the materials available to you.

What are the UN's Global Goals?

To learn more about the global goals visit the official website here:

www.globalgoals.org

You can then test your knowledge by playing the Global Goals game on FreeRice. As you play, you see some advertisements, which allows the sponsors to then donate rice to people.

<https://freerice.com/categories/global-goals>



■ **Figure 1.2** FreeRice

ACTIVITY: Exploring the goals

■ ATL

- Information literacy skills: Use critical literacy skills to analyse and interpret media communications



■ **Figure 1.3** You may want to watch the video on one device and use another device to record your reflections

UN's Sustainable Development Goals – Overview

www.youtube.com/watch?v=M-iJM02m_Hg&ab_channel=UNICEFGeorgia

Discuss before watching: What do you know about the UN's Global Goals?

Discuss after watching: What else do you know about the UN's Global Goals?

What is sustainable development?

<https://youtu.be/7V8oFI4GYMY>

Discuss before watching: What is sustainability? How do the goals relate to sustainability?

Discuss after watching: What are the three things we need to keep in mind when thinking about sustainability? Re-discuss 'What is sustainability?' and 'How do the goals relate to sustainability?'

No point going halfway

<https://youtu.be/DdLqiTvFwJk>

Discuss before watching: What is the risk of only going 'halfway' – surely any progress is good progress?

Discuss after watching: How does the video use analogies to inspire you? Can you think of another analogy to deliver the same message?

Now answer the following questions in your process journal:

- What are the UN's Global Goals?
- What are the aims of the UN's Global Goals?
- What can I do? (As a teenager? As a designer?)
- What do you want the world to look like in 2030?

◆ Assessment opportunities

- ◆ Some of your answers may be useful in Criterion A i: Explain and justify the need.

ACTIVITY: Research

Many excellent videos have been produced to raise awareness of the UN's Global Goals. These are aimed at different audiences and some are about the goals in general or about the specific goals. Have a look on YouTube and see what you can find. If you find a particularly inspiring video, share it with a family member, friend, teacher or even have it shown in assembly!

DISCUSS

People from many professions work together to reach the UN's Global Goals, including everyone from scientists to politicians, and even artists. No matter your profession, the design cycle can help when solving a problem. Designers often work hand in hand with other professionals to find solutions to big problems. Thinking about this unit and the problem you want to solve, are there any other MYP subjects that could help you? How could interdisciplinary work and understanding help you with your solution?



Command terms and MYP 4–5 Assessment

Terms	Definition
Analyse	Break down in order to bring out the essential elements or structure. (To identify parts and relationships, and to interpret information to reach conclusions.)
Construct	Display information in a diagrammatic or logical form.
Create	To evolve from one’s own thought or imagination, as a work or an invention.
Define	Give the precise meaning of a word, phrase, concept or physical quantity.
Demonstrate	Make clear by reasoning or evidence, illustrating with examples or practical application.
Describe	Give a detailed account or picture of a situation, event, pattern or process.
Design	Produce a plan, simulation or model.
Develop	To improve incrementally, elaborate or expand in detail. Evolve to a more advanced or effective state.
Evaluate	Make an appraisal by weighing up the strengths and limitations.
Explain	Give a detailed account including reasons or causes (see also ‘Justify’).
Identify	Provide an answer from a number of possibilities. Recognize and state briefly a distinguishing fact or feature.
Justify	Give valid reasons or evidence to support an answer or conclusion (see also ‘Explain’).
List	Give a sequence of brief answers with no explanation.
Outline	Give a brief account or summary.
Present	Offer for display, observation, examination or consideration.
Prioritize	Give relative importance to, or put in an order of, preference.
State	Give a specific name, value or other brief answer without explanation or calculation.
Summarize	Abstract a general theme or major point(s).

■ **Table 1.1** Common terms you may find helpful



In every subject in MYP you have slightly different objectives in MYP 1, MYP 2–3 and MYP 4–5. It is important that you look at your new objectives for each subject as you join MYP 4, so you know exactly what is required of you. Familiarizing yourself with the command terms will also help you navigate these documents, as they will help you know what is required of you for different achievement levels.

If you look at Criterion A strand i, this is how you can achieve the following grades:

- 1–2: **states** the need for a solution to a problem for a specified client/target audience
- 3–4: **outlines** the need for a solution to a problem for a specified client/target audience
- 5–6: **explains** the need for a solution to a problem for a specified client/target audience
- 7–8: **explains and justifies** the need for a solution to a problem for a client/target audience

At first glance, these descriptions might all seem very similar. The key here is to look at the command terms (**states**, **outlines**, **explains** and **justifies**) so that you know what is required of you.

You can practise using the command terms to answer simple questions at different levels, for example: ‘Why should we ban plastic cutlery in our school cafeteria?’

- 1–2 (**STATES**): In our cafeteria, students are given plastic cutlery, which is then thrown away every day.
- 3–4 (**OUTLINES**): In our cafeteria, students are given plastic cutlery, which is then thrown away every day. Plastic waste is a big problem, which impacts the environment, so as a school we are contributing to this issue.

- 5–6 (**EXPLAINS**): In our cafeteria, students are given plastic cutlery, which is then thrown away every day. Plastic waste is a really big problem, which impacts the environment, because the plastic takes many years to decompose. It fills landfills and often finds its way into other environments, which can damage wildlife, including fish and birds.
- 7–8 (**EXPLAINS AND JUSTIFIES**): In our cafeteria, students are given plastic cutlery, which is then thrown away every day. Plastic waste is a big problem, which impacts the environment, because the plastic takes many years to decompose. It fills landfills and often finds its way into other environments, which can damage wildlife, including fish and birds. The *National Geographic* article by Tik Roon in 2019, ‘Why carrying your own fork and spoon helps solve the plastic crisis’, states that plastic cutlery is one of the deadliest forms of waste in our ocean, killing many fish, birds and other animals. As a school, we are contributing to this issue.

Although in this example you can see the answers getting longer and longer, you could easily accidentally just **outline** or **explain**, while writing a lot. The key here is in the definition for **justify**, which says you must provide ‘valid reasons or evidence’. Use **justify** as an excuse to show off your research.

Other questions you could consider to practise using the different command terms for Criterion A i, include:

- Should all schools teach Design?
- Should homework be banned?
- Should school lunches be free?

You can also practise with the debatable questions from any of your units.

Design situation

You are going to appear on a reality TV show where you will **pitch** an idea for a product to a small group of investors. You must show why your product is novel, realistic and, most importantly, the **impact** you think your product could make. The theme of the reality TV show is 'working towards the UN's Global Goals' and your product can be linked to any goal of your choosing.

This is inspired by real reality shows where entrepreneurs pitch their products to a group of potential investors. The investors decide on the spot if they will support the products financially or not. You may know it as Dragons' Den, Shark Tank, *manē no tora* (The Tigers of Money), Lions' Den, *Fikr wa Talash* (Dream and Achieve), *Dans l'œil du dragon* (In the Dragon's Eye), *Die Höhle der Löwen* (The Lions' Cave) or even *Tu Oportunidad* (Your Opportunity).



■ Figure 1.4 The Fairphone

ACTIVITY: Selecting your goal

■ ATL

- Information literacy skills: Collect and analyse data to identify solutions and make informed decisions

You might already be drawn to one particular goal. If you are stuck, here are two suggestions to help you select a goal that has meaning to you.

- 1 Think of all the big news stories that have happened over the last year. Which has had the biggest emotional impact on you? Does this link to a UN Global Goal?
- 2 Think about the things that make you excited or angry. You might also think about previous Service as Action projects you have enjoyed taking part in. Do these link to any UN Global Goals?

If you are still stuck, have a classmate pick a goal for you to explore. Every goal is interesting, important and meaningful – sometimes having someone pick a goal that you would not have selected makes you think a bit differently and brings you more inspiration and new ideas.

Once you have picked your goal, look at the targets associated with that goal. You can do this by visiting

www.globalgoals.org, clicking on the goal you are interested in and then scrolling down to see the targets.

Now brainstorm around that goal, with the aim of answering 'My goal is important because ...'. Alongside your own ideas, try to find facts and quotes to show why it is important (this will help you **justify** why you have chosen this goal).

You might also want to think about the following: How does the goal affect you, your local community, the wider world? Who else is impacted by the goal? This will help you later when you really **define** your goal and your target audience.

Imagine you have selected Global Goal 14, Life below water, Target: Sustainable fishing. How much easier would it be to **describe** the problems, your product, your target audience and the impact, if you are focusing on a specific area, for example the Coral Triangle, than just sustainable fishing in general?

Use your answers to **summarize** the goal and target you have selected and why.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A i: Explain and justify the need.

What are the aims of the UN's Global Goals?

ACTIVITY: Digging deeper

■ ATL

- Information literacy skills: Access information to be informed and inform others

You have now picked your goal and hopefully narrowed down your context. Now it's time to dig deeper by doing a bit more research.

By MYP 4 you should be producing detailed research plans, including a list of questions you want to answer and how high or low the questions are as a priority for you. You will also need to look at a variety of sources.

Before you begin **listing** your questions, you might find it helpful to complete a compass points map.

Use your compass points map to generate questions and put them into a research table. This should include the questions, the priority of the questions and a space to fill in the sources you use and the answers you find. Remember to generate full citations as you go, instead of just putting in a link to a website or the name of a book.

WHAT MAKES YOU SAY THAT?

■ ATL

- Collaboration skills: Listen actively to other perspectives and ideas
- Collaboration skills: Give and receive meaningful feedback

In this activity you will pitch your goal to another student. You can repeat the exercise with as many students as you want. The teacher should put a timer on the board.

- 1 Find a student to talk to and assign yourselves 'A' and 'B'.
- 2 'A' should take one minute to discuss the goal they selected and why without stopping.

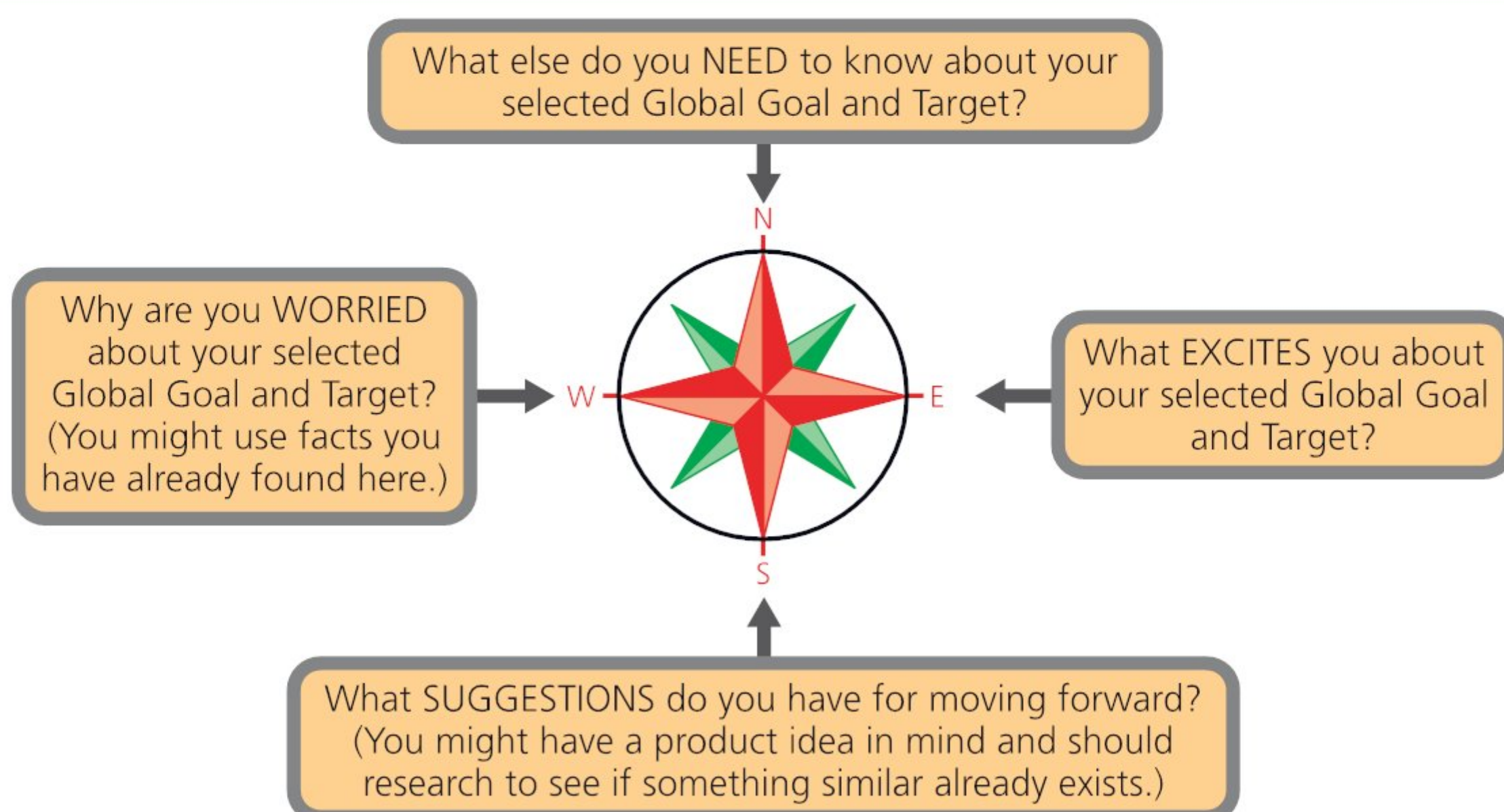
- 3 If they do stop, 'B' can use the prompt 'What makes you say that?' to encourage more information.
- 4 After the first minute, B has a maximum of 30 seconds to provide **feedback**.
- 5 Then switch and start the exercise again.

This should be repeated, so that you have shared your goal with multiple classmates.

In a physical environment, when possible, everyone should be out of their chairs and walking around. Try to speak to people who you don't normally work with. However, in an online environment, a teacher may have to assign students to different pairs.

Discuss

Are some goals more important than others?



■ **Figure 1.5** Compass points map

Hint

- 1 Anything in 'N' on your compass map will probably be 'high priority'.
- 2 Try not to write down questions that you already know the answers to, for example, questions you have answered while completing A i.
- 3 One source that might help you is the Sustainable Development Report, www.sdgindex.org. It includes country profiles, data explorers, key messages, rankings and even an interactive map.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A ii: Identify and prioritize research.



Variety of sources

When you are required to use a 'variety of sources', you should think about the source type and if it is a primary or secondary source.

- **Type:** Magazines, articles, books, interviews, surveys, observations, experiments, videos, websites. Sometimes it can be easy to go straight to websites and videos, but by Grade 4–5 you should be looking for a wider variety of source types.
- **Primary sources:** A first-hand account or an original object. For example, an interview with someone recorded at the time of the event or photographs of an existing product.

- **Secondary sources:** These relay, discuss or analyse information originally presented elsewhere, so it could be a newspaper article reflecting on an event from the past or a web article reviewing an existing product.

An easy way to increase the variety of sources used in design is to work with your target audience, **client** or an expert. This could be done through a face-to-face interview, email or even a survey. Think about the adults in your life who might be classified as experts in the area you are researching. Hint: it could be a teacher.

MEET THE DESIGNER

Ocean Project: Shark opal bracelet

<https://oceanproject.co/collections/save-the-sharks/products/save-a-shark-bracelet>

Ocean Project has created beautiful shark jewellery. When you buy a piece of jewellery, you also get a QR code that allows you to track your own unique shark. You'll be able to see where they are in the world and learn more about the issues that sharks face. Some of the cost of each piece of jewellery goes towards their project of protecting sharks, through fighting against the trade in shark fins. If you don't like sharks, they also have whale, dolphin and turtle jewellery.



■ Figure 1.6 The shark opal bracelet

MEET THE DESIGNER

CATCH

www.hansramzan.com/portfolio/catch.php

Created by designer Hans Ramzan, this is an affordable self-testing device to help people detect HIV. It only costs \$10 and has been designed to make HIV testing easy and accessible, particularly for those in developing countries.



■ Figure 1.7 CATCH

MEET THE DESIGNER

Flo

<http://marikoproduct.com/Flo>

<https://vimeo.com/122025391>

This is an affordable tool that helps people in developing countries to wash and dry reusable, material sanitary pads. Many young girls in developing countries drop out of school when their periods start or miss the days when they are menstruating, because they don't have proper sanitary protection.



■ Figure 1.8 Flo

MEET THE DESIGNER

SurgiBox

www.surgibox.com/product

'Surgibox is an ultraportable sterile field that fits in a backpack.' This means instead of having to bring people to safe, clean operating rooms, you can complete safe, sterile operations anywhere. This is particularly useful for people who may not be near a safe operating space, for example, someone in a rural part of a developing country or someone in a war zone.



■ **Figure 1.9** SurgiBox

MEET THE DESIGNER

Native Shoes' Bloom Collection

www.nativeshoes.com/our-brand.html

Native Shoes are made from algae-enriched ethylene-vinyl acetate (EVA). Many shoes are already made from EVA (such as Crocs), but Native Shoes' Bloom Collection contain at least 10 per cent algae. The algae comes from water sources that contain too much algae. The production of these shoes helps clean both the water and the air.



■ **Figure 1.10** Native Shoes

ACTIVITY: Existing products

■ ATL

■ Information literacy skills: Identify primary and secondary sources

When you have read about the designers on pages 12–13, explore their websites and analyse them. Use the questions below to guide your analysis. This would count as a primary source. You might want to dig deeper by looking at secondary sources – this could be websites, articles or reviews written by other sources, **analysing** the products too.

Which type of source do you think will be more accurate/less biased? Why?

To **analyse** them, answer the following:

- Which Global Goal(s) do you think they link to?
- Who should buy or use the product?
- Who does the product benefit? What makes this product different to other similar products?
- What do you like/dislike about the product?
- What might the impact of the product be?

Now see if you can find existing products that link to your selected Global Goal and answer the same questions.

To find more inspirational products, try searching for the **James Dyson Design Awards**, **Beazley Design Awards** or the **Red Dot Design Awards**. You could also look at the <https://mymodernmet.com> and www.dezeen.com/design websites.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A iii: Analyse existing products.

How can designers help us meet the UN's Global Goals?

DISCUSS

How can designers help us meet the UN's Global Goals?

Who else plays an important role in helping us meet the UN's Global Goals?



■ **Figure 1.11** Getting ideas for a product

Stuck for an idea?

For the next activity you will write a design **brief**, summarizing what you plan to make and why. If you are still stuck, you might want to brainstorm around the following three prompts first:

- 1 What type of product do you want to make?
 - Examples: Stationery, an app, a documentary, something to wear, a toy, something to eat.
- 2 Who will the product be made for?
 - Examples: A teacher, a family, an old person, a child, a member of the government, a teenager, a business owner.
- 3 What part of your goal are you trying to address?
 - For this you might want to look back at your goal's targets or your initial brainstorming.

OPTIONS EXPLOSION

Another option for designers who are stuck is completing the 'options explosion' routine.

- 1 **List the obvious options.** There would not be a decision unless there were at least two or three obvious options.
- 2 **Now brainstorm all sorts of different options to find the 'hidden' options.** Often some hidden options are better choices. Be imaginative. Build on ideas and combine them to get new ones. Look for ideas of a very different kind. Imagine you are in different roles and suggest ideas from the perspective of those roles.
- 3 **Ask: What have you learnt about the situation from finding these options? This is a way of understanding the situation better.**



ACTIVITY: Design brief

■ ATL

- Creative-thinking skills: Create novel solutions to authentic problems

It's now time to **summarize** your learning so far and to tell us what you plan to make.

When you have a clear idea of what you will be making, you need to write your design brief. Remember that later on you will be **pitching** your product, so you might want to practise using persuasive language and showing why your product is so important.

The design brief should be based on your learning in criterion A i–iii.

In your design brief, you should include:

- a definition of the problem you are trying to solve
- the UN Global Goal you are focused on (and if any other goals are touched on)
- key facts from your research
- how **analysing** the existing products has inspired your ideas
- the impact you hope your product will have.

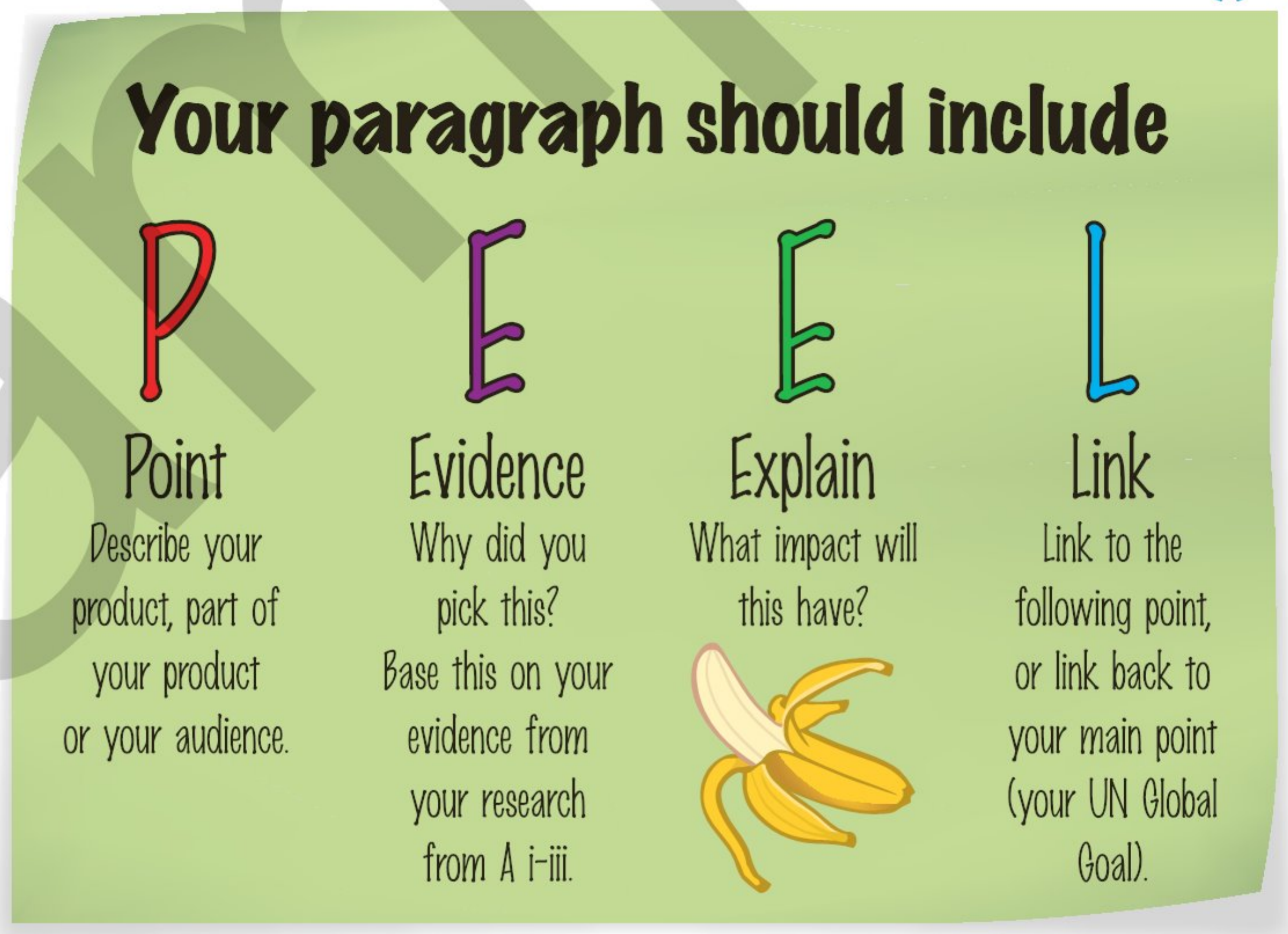
◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A iv: Develop a design brief.



Research skills

You might want to use 'PEEL' to help you write your design brief. You may already be familiar with this strategy from other classes. It is a useful tool for writing paragraphs that include evidence. Your design brief needs to include what you have learnt from A i, ii and iii, using PEEL.



■ Figure 1.12 PEEL



ACTIVITY: Design specifications

■ ATL

- Creative-thinking skills: Make guesses, ask 'what if' questions and generate testable hypotheses

Writing clear design **specifications** helps you to have a clear direction when making your product and is also a clear way of evaluating your product. For this **design situation**, where you will be pitching your product, you

can also use it to really **show** that you have thought about all the product's details, that you will be able to prove that the product works, and you will be able to **explain** the impact of the product. Although you might not be able to describe the exact impact, you can **describe** the potential impact and how this will be tested. You should include specifications for the material, client, cost, sustainability and function.

Specification type	My specification	Reason: based on research	Potential impact	Testing method
Material	My product, a tote bag, will use locally grown bamboo, instead of cotton.	Good on You says: 'Bamboo can be a very sustainable crop: a fast-growing grass, it requires no fertilizer and self-regenerates from its own roots, so it doesn't need to be replanted. When compared to cotton cultivation, which requires large amounts of water, pesticides, and labour, the advantages are pretty clear.' (https://goodonyou.eco) This means bamboo will be cheaper and more environmentally friendly than cotton.	My product will have a lower carbon footprint than cotton tote bags.	Show that at least 90% of my product is made from bamboo. I can photograph the production and have receipts from the bamboo provider. Only the label and the ink should be made of anything other than bamboo.
Client				
Cost				
Sustainability				
Function				

■ **Table 1.2** A clear breakdown of your design specification

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B ii: Develop a design specification.

WHAT CAN I DO?

As defining the potential impact of your product is key for writing your specifications and also for when you pitch your product, you may want to try the following activity, based on the visible thinking routine 'projecting across time'. As we are aiming to achieve the goals by 2030, use this to help you when describing the impact of your product.

- Map what you think or already know. What do you know about the current problems linked to your goal?
- Reach back in time. What was the problem like in the year 2000? What about 1950?
- Reach forward in time. Will the goal be met by 2030? What role will your product play in reaching this goal?

ACTIVITY: What your product will look like

■ ATL

- Creative-thinking skills: Use brainstorming and visual diagrams to generate new ideas and inquiries

You need to draw several sketches of what your product might look like and gather feedback from classmates, a design teacher or, if possible, an expert or potential customer.

When you have your final pitch, you want to show that you have considered different ideas and that your final idea is based on feedback from others, not just what you thought was best.

You might also want to think about further ways of exploring ideas and sharing them to gather feedback. For example, if you are making something out of a fabric, gather some different swatches of fabric for people to feel and give feedback on. If you are developing an app or website, you might want to sketch

out how the sections of the app will be organized (wireframe) and ask others if they think the order makes sense.



■ **Figure 1.13** A wireframe allows a designer to show how different pages of a website or app are laid out. They can then get feedback from their target audience on the **user experience**

ACTIVITY: Quick feedback

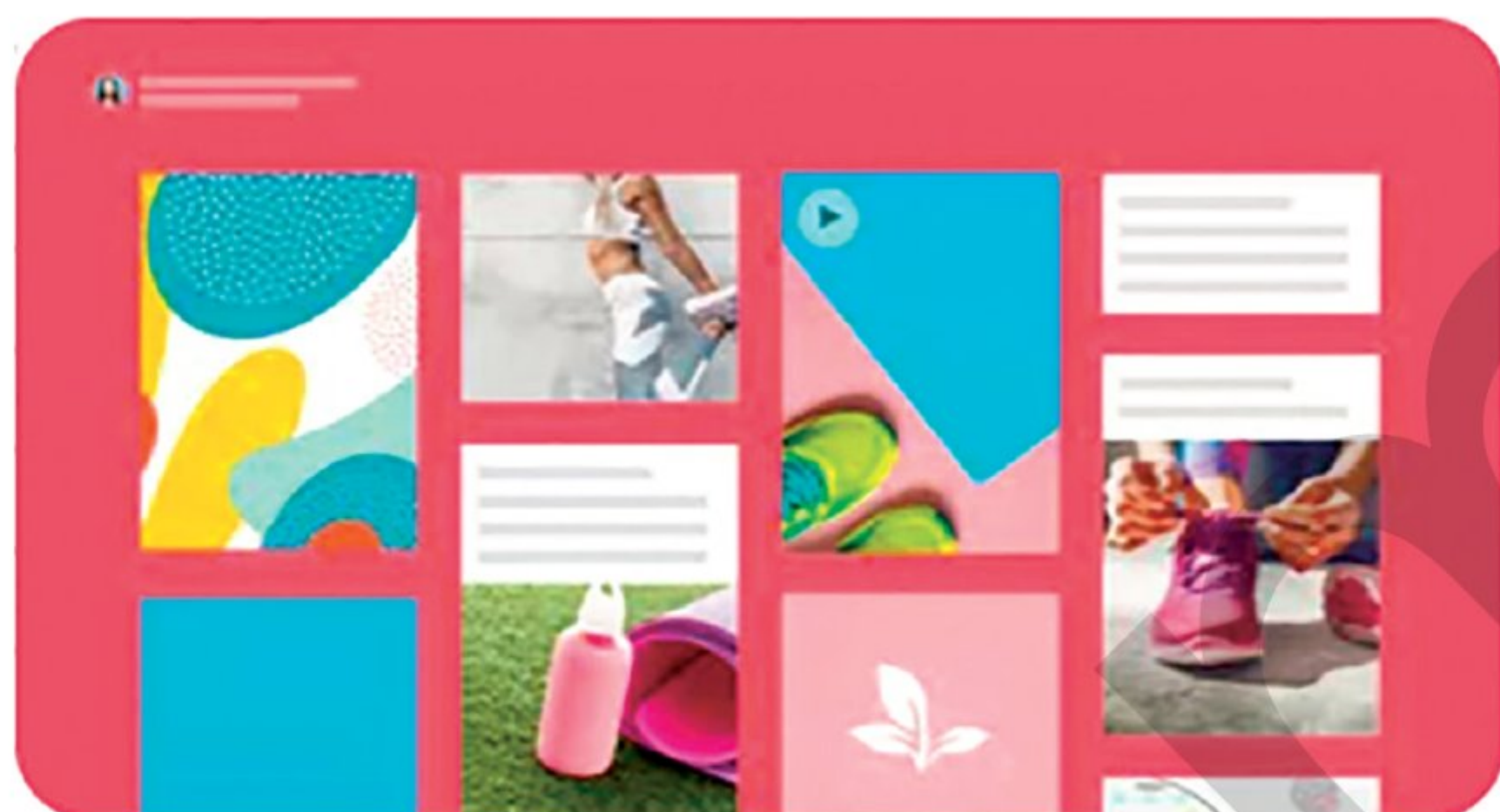
■ ATL

- Communication skills: Give and receive meaningful feedback

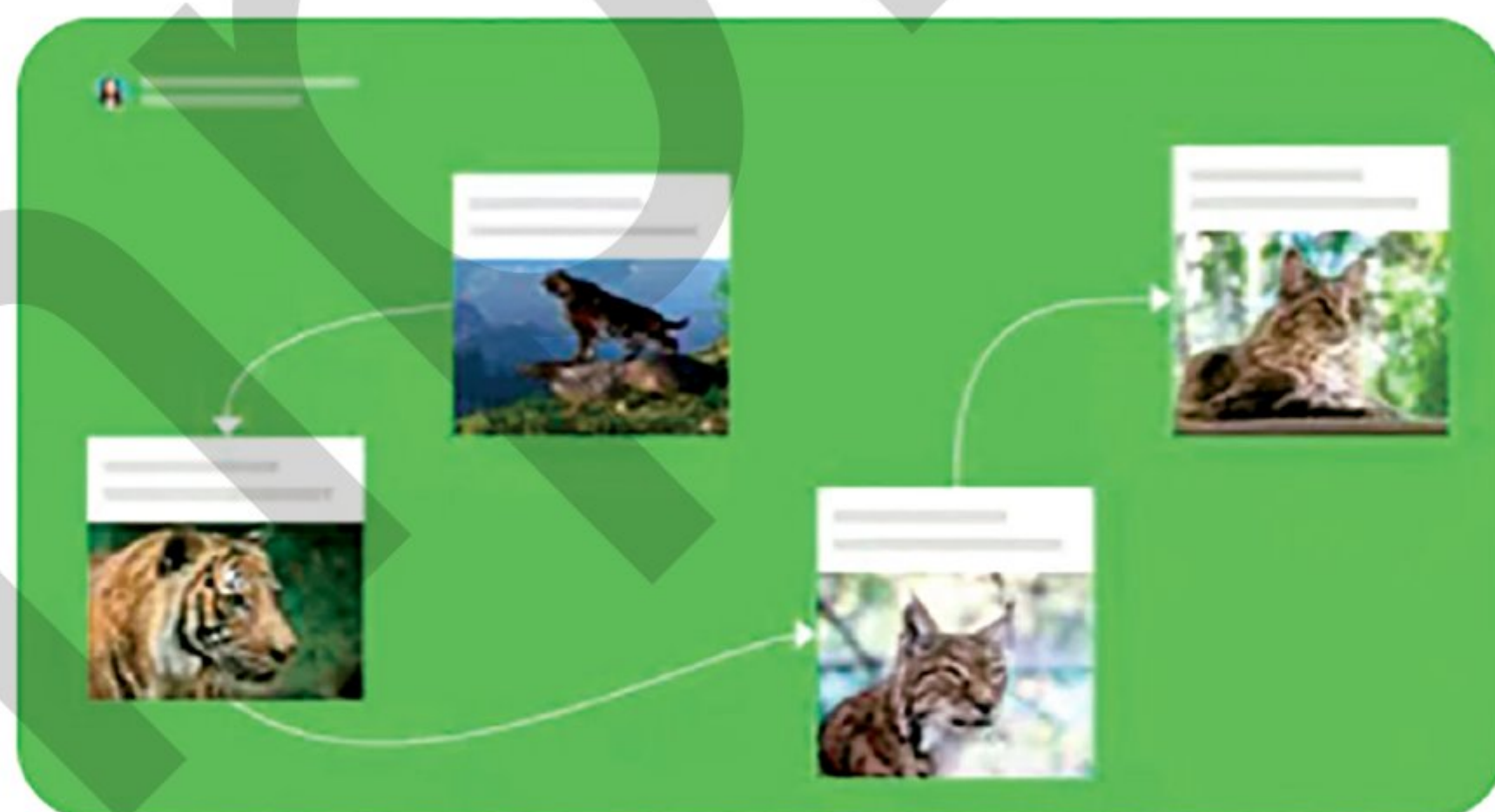
Create a gallery wall in your classroom for everyone to share their initial ideas. This means printing out your ideas or having your process journal laid out for others to read.

Spend some time with everyone, walking around the classroom giving each other feedback. While this is happening, try to focus on giving other people feedback and not worrying too much about the feedback you are getting, as you will have plenty of time to digest and **analyse** this later.

You could give your classmates stickers to place next to ideas that stand out to them, as a method of voting. You can also give them sticky notes to leave comments, suggestions and questions.



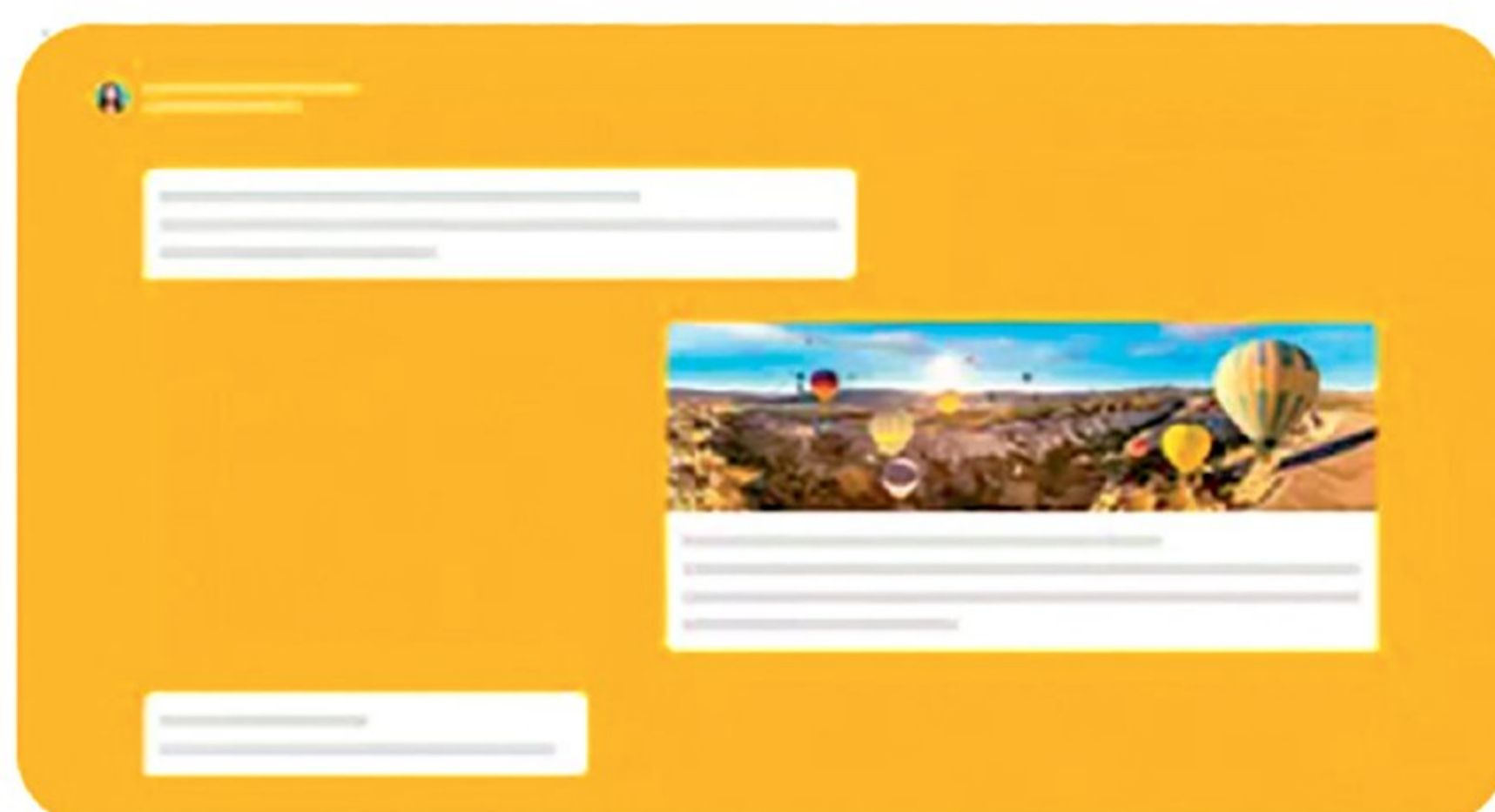
Wall



Canvas



Timeline



Backchannel

■ **Figure 1.14** If you are using a digital tool, you may be given different layout options. This could help you to organize ideas into different categories. You might also share a board with your class, with different columns for different people's ideas

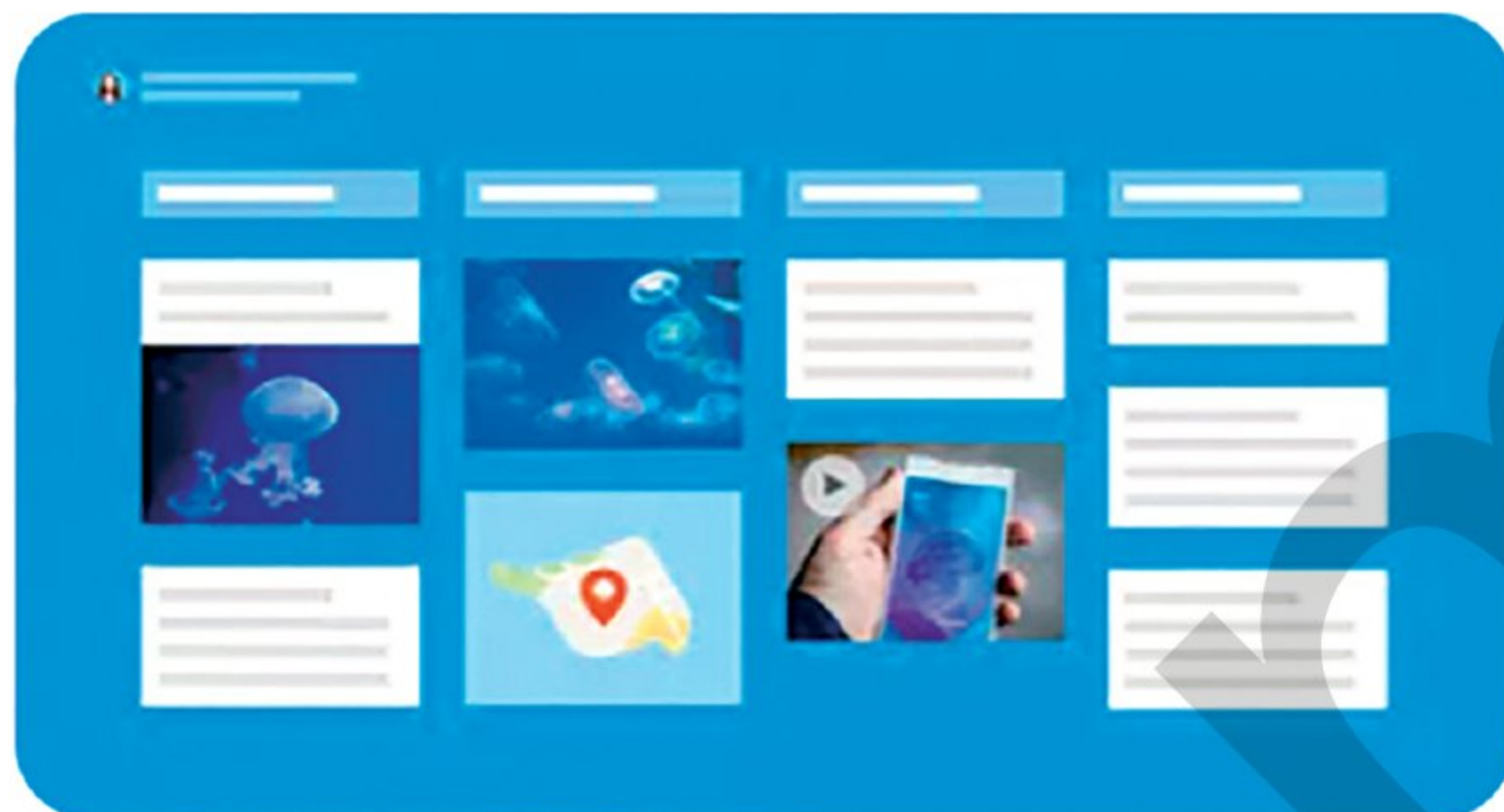
If there are particular elements you want feedback on, you could leave a feedback form, have a piece of paper with a clear question at the top, or you could use another method to help you receive meaningful feedback. It might help to use your specifications to write some of these questions.

If your class would rather do this digitally, you could use a tool like Padlet or Lucidchart to share your work and gather feedback.

Based on the feedback, **describe** which of your ideas you will **develop** further. You may even be combining different elements from your different ideas into something new.

◆ Assessment opportunities

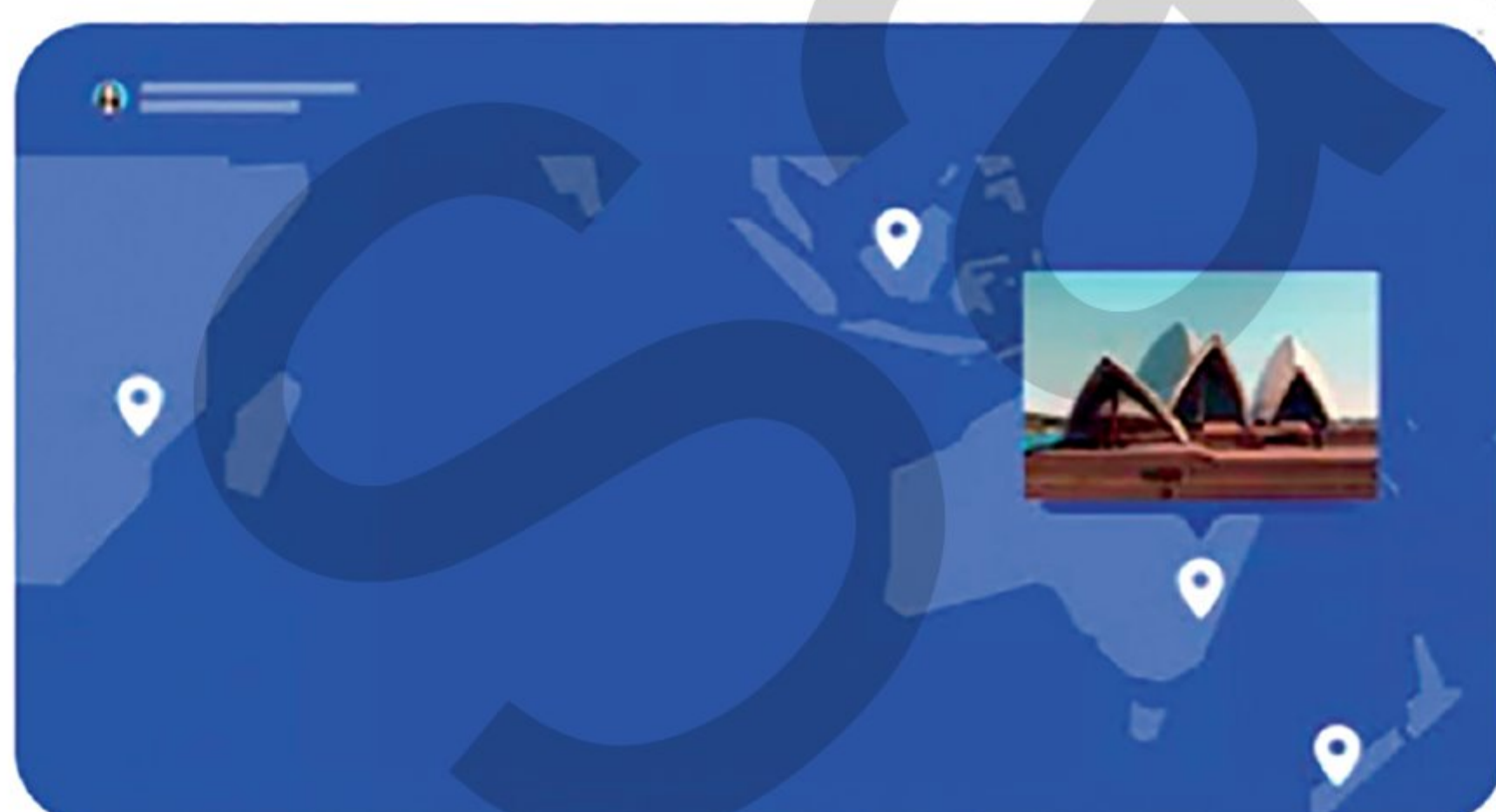
- ◆ This activity can be assessed using Criterion B iii: Present and justify the chosen design.



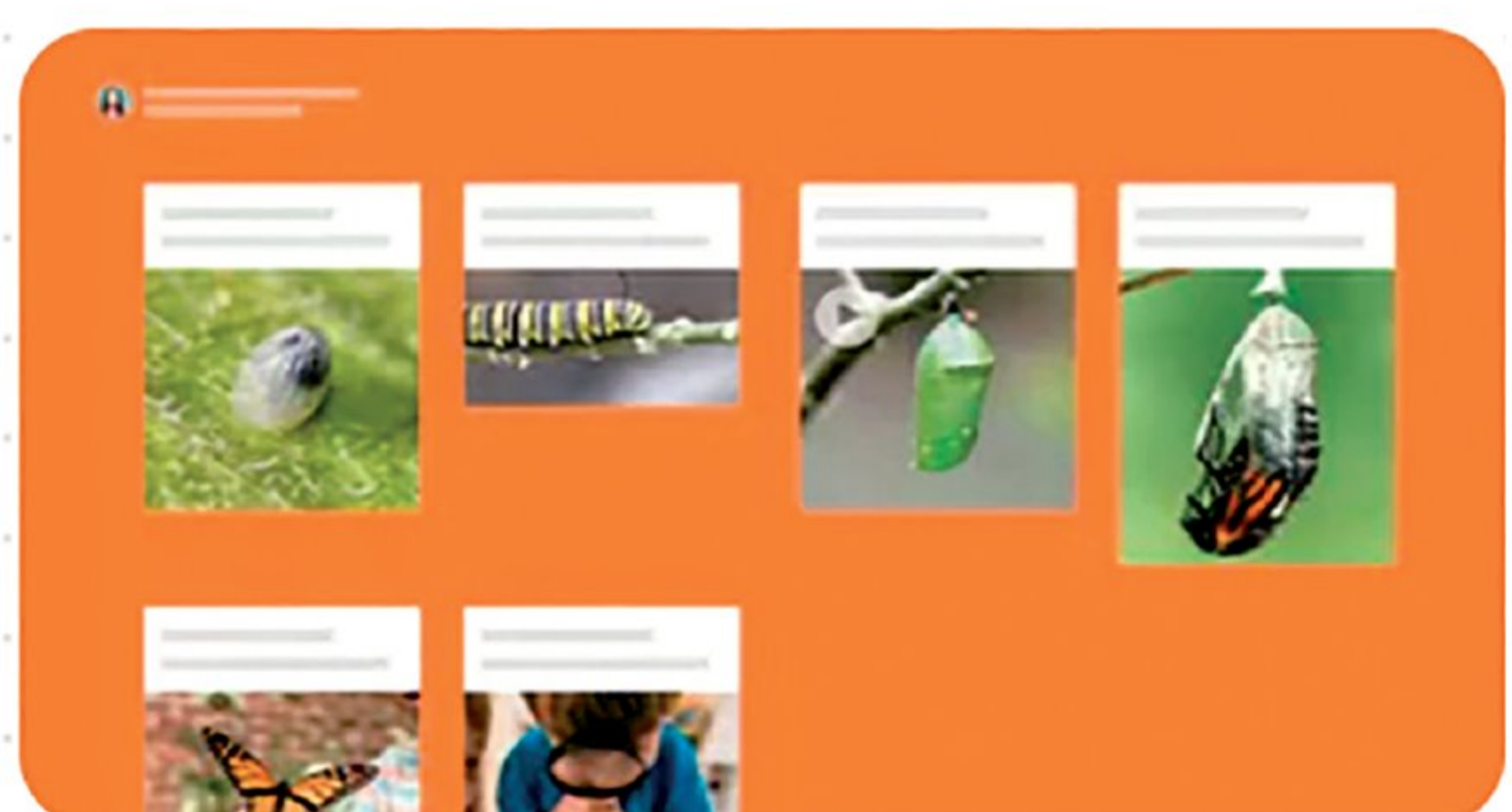
Shelf



Stream



Map



Grid

What do you want the world to look like in 2030?

ACTIVITY: What are your next steps?

■ ATL

- Critical-thinking skills: Identify obstacles and challenges

It's now time to **develop** your final idea. You should **develop** a more detailed sketch to show what your product will look like. You may wish to include labels and draw your product from multiple angles.

You should also **create** a table, laying out exactly what you need to do to make your product **prototype**.

When making your table, consider how many lessons you have left, how long each lesson is and how much time might be used for other things, such as teacher information and packing up. Make sure you account for the time that might be out of your control, instead of planning to use every possible minute available. What other obstacles and challenges might you need to plan for? What other disruptions might take class time away?

If you are challenging yourself to **develop** a new skill or technique, such as using new machinery or software, how can you allow enough time to do this? How will you learn the new skill or technique? Who can help you? You might wish to include video tutorials or working with your teacher in your plan.

Make sure your table is realistic. Make sure it is based on your overall goal and design specifications. Be detailed but build in flexibility.

You should also add a column to write reflections and show photographs or screenshots of your work.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B iv: Develop planning sketches and C i: Construct a logical plan.

ACTIVITY: Show how you worked as a designer

■ ATL

- Affective skills: Demonstrate persistence and perseverance

After completing your project, use the reflections and photographs from your table to show all the technical skills you used. You should use correct terminology here. **Describe** how closely you followed your plan and **justify** any changes you had to make to individual steps of the plan or to the overall plan. You may wish to compare your final product prototype to your detailed sketch.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion C ii: Demonstrate technical skills, C iii: Follow the plan to create the solution and C iv: Justify changes made to the plan.



ACTIVITY: The final pitch

■ ATL

- Communication skills: Use appropriate forms of writing for different purposes and audiences



■ **Figure 1.15** Pitching your idea

Before you pitch your idea at the 'dragons' den' you will want to make sure you are prepared by having proof that your product is good and will make an impact. Go back to your **testing** methods in your design specifications and test your product. You may also wish to share your product prototype to gather additional quick comments – you could use this feedback to prove the success of your idea.

You will want to show off all the things that make your product great, but you should also look for ways that the product could be improved. When you pitch

your product, you will be hoping to gain money or expertise to help you **develop** the product further. What weaknesses does your product have and what help do you need to improve it?

Using the information gathered, you will need to write your pitch, describing the success of the product, what could be improved and, most importantly, the impact of your product (linked to your chosen Global Goal).

You may wish to use the PEEL method described on page 15. You may also wish to use persuasive and emotive language to help you. Your final presentation should include some photographs and research, showing the problem you are trying to solve and the **design** process you went through during this project. You might also consider giving the audience samples or allowing them to view your process journal. You might even come up with a tagline, slogan or song for your product.

You might wish to search YouTube for **successful Dragon's Den pitches** or **successful Shark Tank pitches** for some inspiration.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion D ii: Evaluate the success of the solution, D iii: Explain how to improve the solution and D iv: Explain the impact of the solution.

HOW ELSE AND WHY?

A thinking routine that might help you to write the best pitch possible is 'How Else and Why?' It can also help you prepare for answering questions about your product.

- 1** 'What I want to say is ...'
Student makes a statement and explains intention.
- 2** 'How else can I say this? Why?'
Student considers intention, audience and situation to reframe (language, tone, body language).
- 3** 'How else can I say this? Why?'
Student considers intention, audience and situation to reframe (language, tone, body language)
- 4** (Repeat question)

DISCUSS

In this unit you looked at the role that individuals and designers can play in achieving the UN's Global Goals, but what about the role the government and different countries play? Can we fulfil any of the goals without the support of all governments/countries?

Some people think that to be truly sustainable we should only use the resources we already have and argue that creating new products is creating more problems. Do you agree or disagree? Are 'sustainability' and 'change' opposites?



■ **Figure 1.16** My activist toolkit

A great way to get involved with a community of other activists working towards helping us achieve the goal is to get involved with the Instagram series 'The Activist Diaries'. Here activists all over the world document and share what they are doing!

REFLECTIONS

Now that you have completed this project, think about what else you can do to help reach the UN's 2030 Global Goals.

What could you do as an individual, a family or with your class? Are there potential service projects you could **create** linked to the Global Goals?

EXTENSION

Turn your prototype into a real product. See if you can fundraise to **create** the product – this could include getting money from local businesses, organizing a fundraiser or even using crowdsourcing. Why not make your product a reality?

! Take action

! Take action in your school towards your goal through raising awareness or raising money. You could work with leadership in your school to make small changes focusing on one of the goals. You might consider how you could make a difference in your local community, outside of school, towards one of the goals too. Remember that it is the responsibility of every person to work towards these goals – small differences can make big changes!

Find out more about the Sustainable Development Goals:

- Sustainable Development Goals Action Campaign: www.sdgactioncampaign.org/take-action
- Sustainable Development Goals – The Lazy Person's Guide to Saving the World: www.un.org/sustainabledevelopment/takeaction
- Global Goals Campaigns: www.globalgoals.org/action

Reflection

In this chapter you have found out about the UN’s Global Goals for Sustainable Development. You explored how different people and organizations are working towards these goals. You took action by choosing a goal you can make a difference to by designing a product.

Use this table to reflect on your own learning in this chapter.					
Questions we asked	Answers we found	Any further questions now?			
Factual: What are the UN’s Global Goals? What are the aims of the UN’s Global Goals? What can I do? What do you want the world to look like in 2030?					
Conceptual: How can designers help us meet the UN’s Global Goals? Other than designers, who else plays an important role in helping us meet the UN’s Global Goals?					
Debatable: Can we fulfil any of the goals without the support of all governments/countries? How might sustainability limit change?					
Approaches to Learning you used in this chapter:	Description – what new skills did you learn?	How well did you master the skills?			
		Novice	Learner	Practitioner	Expert
Communication skills					
Collaboration skills					
Organization skills					
Reflection skills					
Information literacy skills					
Critical-thinking skills					
Creative-thinking skills					
Learner profile attribute(s)	Reflect on the importance of being an inquirer for your learning in this chapter.				
Inquirer					

2

How can designers help people share their feelings?

- The **form** of a product can help it better **function** to enable people to **communicate** their feelings.



■ **Figure 2.1** Why do we find it hard to say what we feel?

CONSIDER THESE QUESTIONS:

Factual:

What mental health issues do children and teenagers often face?

What psychological issues do people find hard to discuss?

Conceptual:

Why do we find it hard to say how we feel?

Debatable:

Is a problem shared a problem halved?

Now **share** and **compare** your thoughts and ideas with your partner, or with the whole class.

KEY WORDS

mental health
therapy

IN THIS CHAPTER, WE WILL ...

- **find out** about different mental health problems affecting young people
- **explore** how good design can help people discuss mental health issues
- **take action** by designing a product to help people express their emotions.

These Approaches to Learning (ATL) skills will be useful ...

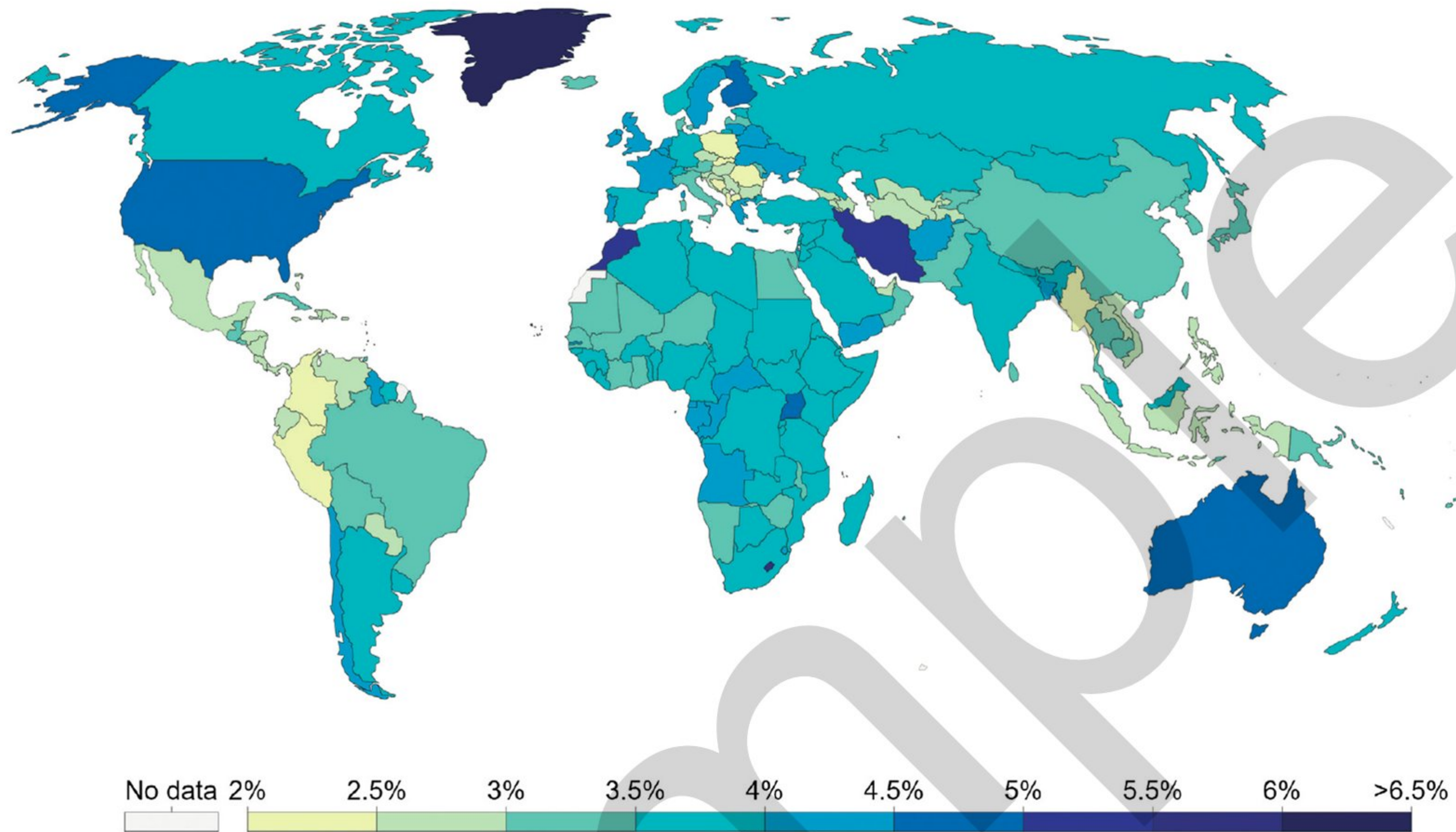
- Communication skills
- Collaboration skills
- Organization skills
- Reflection skills
- Information literacy skills
- Critical-thinking skills
- Creative-thinking skills

Assessment opportunities in this chapter:

- ◆ Criterion A: Define and research problem
- ◆ Criterion B: Develop ideas
- ◆ Criterion C: Plan and create a solution
- ◆ Criterion D: Test and evaluate

Share of the population with depression, 2017

Prevalence of depressive disorders in a given population. This is measured as the age-standardized prevalence, which assumes a constant age structure to compare between countries and through time. Figures attempt to provide a true estimate (going beyond reported diagnosis) of depression prevalence based on medical, epidemiological data, surveys and meta-regression modelling.



Source: IHME, Global Burden of Disease

CC BY

Figure 2.2 Our World in Data: Mental health

In this chapter you will think about the different mental health and emotional difficulties many people, including children and teenagers, face. This might include mental health issues such as depression, anxiety, eating disorders, obsessive-compulsive disorder, bipolar disorders and even post-traumatic stress disorder. It might also include helping someone who is dealing with emotional issues based on a recent event, such as a death in the family. You will make sure that you are sensitive when exploring these complex issues and will make sure you use your research skills to help you seek accurate information about them. You will think about the positive **impact** that expressing your emotions can have and will **design** a solution that allows you to express your emotions. Although this chapter deals with some challenging and complex situations, you will be able to make fun, positive solutions!

● We will reflect on this learner profile attribute:

● Caring

We will be caring by helping people to express themselves. Instead of just having sympathy for the person we are designing for, we will be giving them tools to express themselves. Being solution-focused allows us to have a positive impact on others.

▼ Links to: PHSE

In your PHSE class you often focus on physical health, but probably explore mental health at some point too. If not, it might be something explored through your advisory or homeroom curriculum. See what connections you can make between this chapter and what you have learnt about mental health.

What mental health issues do children and teenagers often face?

ACTIVITY: Dealing with sensitive issues

■ ATL

■ Collaboration skills: Make fair and equitable decisions

It is important to note that in this chapter you may need to seek more adult support and **feedback** than normal. For example, if you want to gather data from your classmates through a survey, you may want to run the questions by your teacher or even a school counsellor before sending it out. They can help you make sure the questions are phrased appropriately, but they can also help make sure your results are anonymous.

It is also important to note that there may be people in your class who are struggling with mental health issues. To make sure that everyone feels comfortable and safe, it is a good idea to draw up a class contract. This contract should show common agreements on how you will work together, and how you will treat the information shared.

In your class contract you might want to think about:

- what should people do if they feel uncomfortable with a topic
- what should the class do if someone discloses something private
- what information should stay within the classroom and when might information need to be shared (for example, with a school counsellor)
- are there any topics you don't want to be discussed
- how should you speak to each other
- how can you show you are active listeners
- how will you show strong social skills
- how will you show you are caring?

The organization Facing History and Ourselves has good guidance for creating a class contract:
www.facinghistory.org/resource-library/teaching-strategies/contracting



■ **Figure 2.3** Counseling is a really helpful support when looking after your mental health



Feedback and expert advice

No matter how much of a fantastic designer you are, it can always be beneficial to seek feedback and advice from others. You already work closely with your **client** or target audience, but an expert can give you a different perspective on your work. This might mean getting feedback on your ideas from another designer, but it could also be seeking expert advice linked to the topic you are focusing on. In this unit it might be helpful to get feedback from a teacher, pastoral leader or even a school counsellor or psychologist. They can help you know the correct terminology to use and can give you advice on dealing with sensitive issues. You might get their feedback at various stages of the design process. For example, they might be a research source for you, they might also help you gather more research by recommending websites to review or help you write survey questions and, finally, by give you feedback on your ideas and final product.

GETTING STARTED

DISCUSS: How do we feel about emotions?



■ **Figure 2.4** Different emotions

- How aware are you of your emotions? Are you aware when you are happy or sad, or are you only aware when you look back?
- Are you always comfortable expressing how you feel? Are there any times you hide how you feel? Are there any people/types of people you don't like to express your feelings with?
- When you are not feeling positive, what do you do/ who do you talk to?
- Why might it be good for someone to express/talk about their mental health?
- Apart from talking about feelings, what other ways can you express how you feel?
- Do you know anyone who has struggled with their emotions? If so, how has it affected them?

Note: Never mention names. You might say, 'I know a boy who ...' or 'a friend of mine ...'.

ACTIVITY: Digging deeper

■ ATL

- Information literacy skills: Make connections between various sources of information

Write down a reflection after the discussion 'How do we feel about emotions?'

Did anything surprise you or was it confirmation that other people had the same ideas as you?

To add to your discussion, do some initial research to answer the following questions:

- What mental health issues do children and teenagers often face?
- What psychological issues do people find hard to discuss?

Now try to answer the following question by making connections between your discussion and your research:

'Why do we find it hard to say how we feel?'

◆ Assessment opportunities

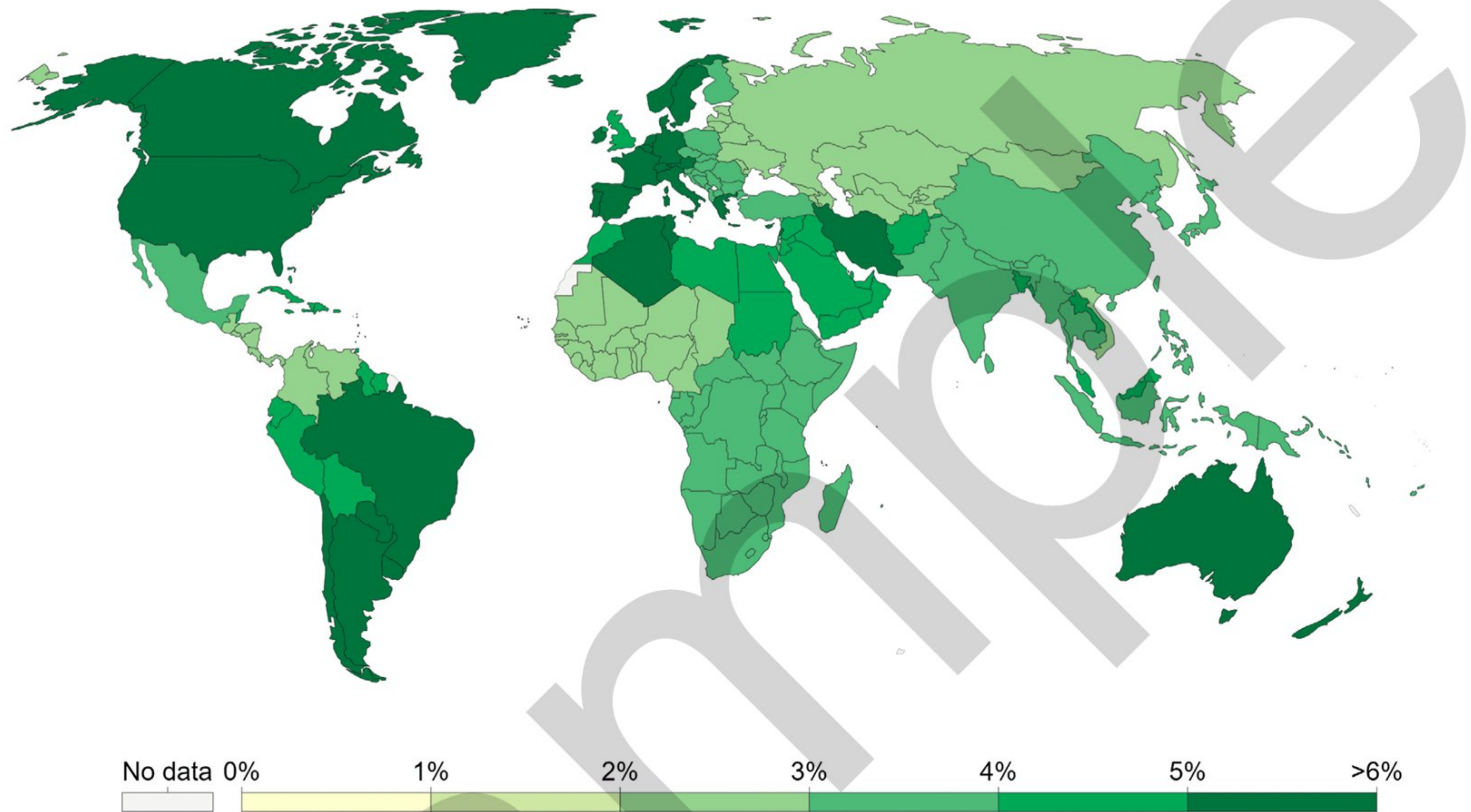
- ◆ This activity can be assessed using Criterion A i: Explain and justify the need.

You might want to look at websites that deal with mental health issues within your country and find out information about specific issues.

A good website that gives a general understanding of mental health issues across the world is <https://ourworldindata.org/mental-health>

Share of population with anxiety disorders, 2017

Share of population with an anxiety disorder. This share has been age-standardized assuming a constant age structure to compare prevalence between countries and through time. Figures attempt to provide a true estimate (going beyond reported diagnosis) of anxiety disorder prevalence based on medical, epidemiological data, surveys and meta-regression modelling.



Source: IHME, Global Burden of Disease

CC BY

Figure 2.5 Our World in Data has many detailed graphs on many topics, including mental health. In this example, we see a map with data about anxiety disorders. Below the map, you can see further information, such as the sources used, and you can also view the data as a chart or table. The map itself is interactive, allowing you to customize it by place and year

DISCUSS: Mental health is like physical health

We will all suffer from physical and mental health issues at some point in our lives. Some people are generally healthier than others, but moments of negative health can impact anyone at any time. We can do things to improve our health, both physical and mental.

You can find many thought-provoking comics about mental health on the Robot-Hugs website, www.robot-hugs.com/tag/mental-illness.

Why do you think mental health and physical health are treated so differently?

What psychological issues do people find hard to discuss?

ACTIVITY: Gathering data

■ ATL

- Information literacy skills: Collect and analyse data to identify solutions and make informed decisions



■ **Figure 2.6** It is easy to make online surveys anonymous

When **explaining** a problem you want to solve and **justifying** why it is important (A i), you must make sure that you gather information from various sources. You have already gathered some ideas through a discussion, as well as some initial research. Here are some other ideas for collecting information:

- A **survey** (remember to keep results anonymous and share your questions with your teacher or counsellor before sending it out).
- An **interview** (maybe interview a friend but keep them anonymous; you could also interview a pastoral leader in your school or a counsellor).
- Look at some of the **research conducted by the IB**. Much of their research deals with student well-being: www.ibo.org/research
- Continue doing **research online** (charity websites, information videos, articles on online newspapers, etc.).

To make sure you are properly **explaining** the issue and **justifying** why something needs to be done about it, you might write down five things you need to know. Use these as your research questions. Additional information can be very useful and you might find out surprising facts, but make sure you are gathering information for the things you **identify** as a priority.

Try to use the information you have gathered to decide who your audience will be and if you want to focus on any particular emotional difficulties. For example, you might decide to make a product for a child dealing with anxiety, or for a teenager dealing with an eating disorder.

It is very important that you choose a particular client, as a product that works for a small child will not work for an older teenager. However, you might choose to narrow down the emotional issue to something very specific, such as people with eating disorders, or you might make a product that helps people with general emotional disorders.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A i: Explain and justify the need and A ii: Identify and prioritize the research.

If you are working with a specific client, with a specific issue, remember to be sensitive and protect their privacy. It might be best for this unit to deal with a target audience, instead of an individual person. This might mean that you are dealing with a broader topic, such as general stress in your grade, as opposed to a specific mental health issue.

HEADLINE

Look at the issue and client you are focusing on.

If you were to write a headline for this issue right now that captured the most important aspect that should be remembered, what would that headline be?

Visit the Harvard Project Zero website to find out more about the headlines thinking routine: <http://pz.harvard.edu/resources/headlines>

Why do we find it hard to say how we feel?

ACTIVITY: Some new research techniques

■ ATL

- Collaboration skills: Practise empathy
- Information literacy skills: Collect and analyse data to identify solutions and make informed decisions

Although you have already started your initial research and may have focused on statistics and facts, you now need to use some empathy to understand what that information truly means to the individuals affected.

Complete one or both of the following activities:
Reporter's notebook or Word, phrase, sentence.

Reporter's notebook

- 1 Identify the issue you will be exploring in this chapter.**
Either emotional expression in general or related to something specific, like a specific mental health issue.
- 2 Identify the facts and events of the situation.**
You can use some of the facts you have already gathered or find more. Look at your facts – are they clear? If not, dig deeper!
- 3 Now name the thoughts and feelings of the people impacted by the issue you are focusing on.**
Remember, you might not be thinking about the individual impacted directly, but the other people

connected to that person. For example, if you are thinking about the thoughts and feelings of a teenager with anxiety, you might think about how this impacts their friends, family and teachers.

- 4 After looking at the facts, followed by the thoughts and feelings, how has your understanding changed?**
Can you use the thoughts and feelings to help you better **explain** the facts uncovered?

Word, phrase, sentence

Look back through a source you used for research. This could be a website, an interview, an article or another source.

Review the work and select a:

- **word that captured your attention or struck you as powerful**
- **phrase that moved, engaged or provoked you**
- **sentence that was meaningful to you, that you felt captures the core idea of the text.**

If you do this same activity for multiple sources, you can then look for any emerging themes, and think about how this activity may help you to make predictions or **summarize** your learning.

◆ Assessment opportunities

- ◆ This work can be assessed using Criterion A ii: Identify and prioritize the research.

DISCUSS

How did completing the Reporter's notebook or the Word, phrase, sentence activity differ from how you normally do research? What were the benefits and the drawbacks?

USER EXPERIENCE

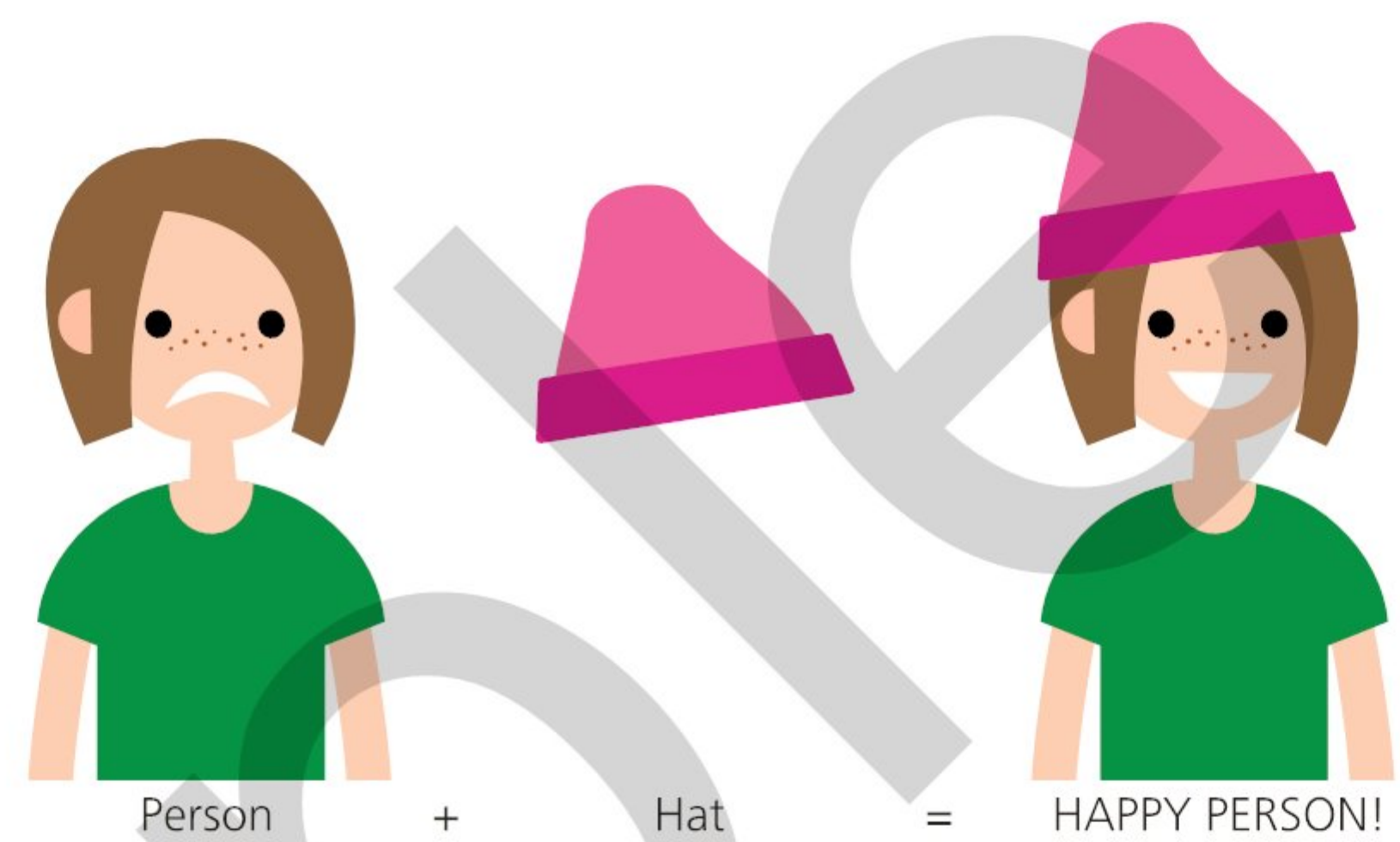
When we **analyse** products, we often just look at the product physically, thinking about things like the **aesthetics** and materials, and then touch on other elements such as the cost or environmental impact. A product is no good if it is not user-friendly. In this chapter, when **analysing** existing products, you will be thinking about the **user experience**, often called the **UX**.

Strategies for **analysing** the user experience of a product are shown in Figure 2.7.



■ **Figure 2.7** When analysing the products, think about these seven elements

How easy is the product to use? How valuable is it to the user? How desirable is the product?



■ **Figure 2.8** Another way to think about the user experience of a product is to not just think about the product alone (maybe analysing it physically) but to think about what the product will do for the client. How does the product transform the user? Does it make them happier, healthier, smarter?

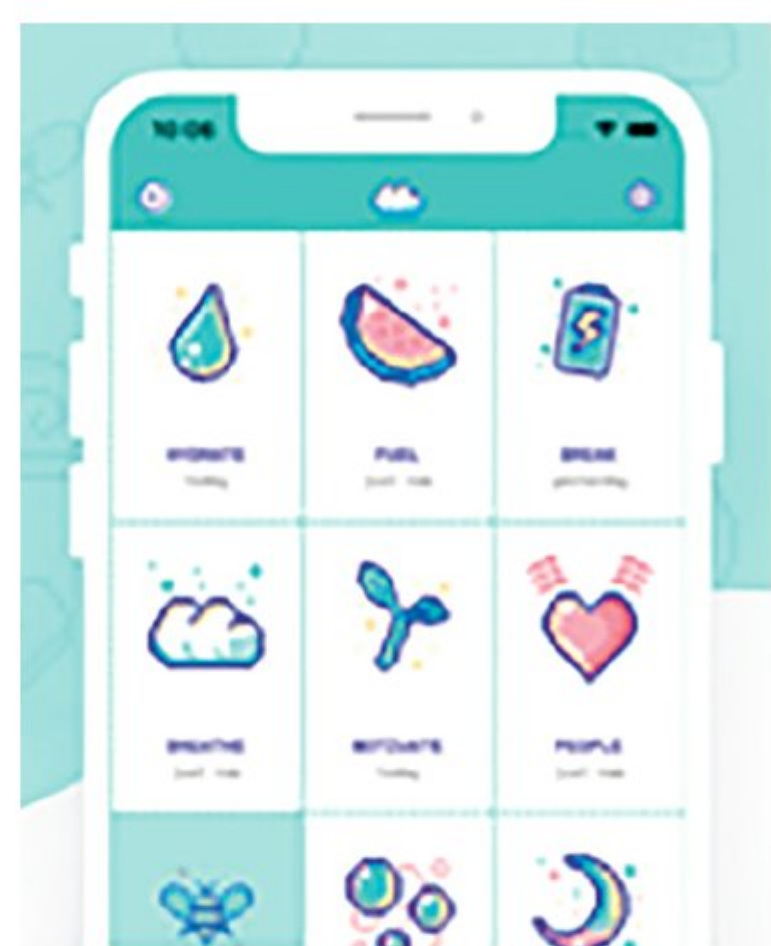
ACTIVITY: Existing products

■ ATL

- Critical-thinking skills: Practise observing carefully in order to recognize problems

When **evaluating** the following products, think about the user experience. Make sure you are not just pointing out the positive features but are looking for any potential problems they might have. You may also want to think about how the product would help your chosen client/target audience.

Aloe Bud



■ **Figure 2.9** Apps can be a useful tool to track our habits and emotions

The app Aloe Bud allows the user to monitor their emotions, as well as log their sleep and how much water they drink.

The Imaginary Friends Society



■ **Figure 2.10** Animated videos can help children understand emotions better

The Imaginary Friends Society worked with a group of animation studios to make videos to help children going through cancer or who are close to people going through cancer.

Watch and **analyse** their videos 'Being Scared' and 'Feeling Sad'.

Imaginary Friend Society – Being scared:
<https://youtu.be/XSPajCMWAis>

Imaginary Friend Society – Feeling sad:
<https://youtu.be/15i37h0XTZo>

ACTIVITY: Explore

Want to explore more? Start by looking at some of these apps:

- Cove – 'Music for your mental health': www.cove-app.com
- Feeling Good – An app developed with the UK's National Health Service (NHS): <https://play.google.com/store/apps/details?id=uk.co.positiverewards.feelgood&hl=en&gl=US>
- Punkt – 'One sentence a day to learn more about yourself. Reflect on emotions, weaknesses and driving factors in your life.': <https://punktapp.me>
- Reflectly – 'The world's first intelligent journal': <https://reflectly.app>

You might also want to look at online shops aimed at therapists:

- www.childtherapytoys.com
- www.playtherapysupply.com
- www.sensetoys.com

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A iii: Analyse existing products.

Watch and discuss

Watch 'What is Moonshot Thinking':

<https://youtu.be/pEr4j8kgwOk>

How might moonshot thinking help you make a product with a bigger impact on others?

Moon Picnic



■ **Figure 2.11** Toys can also be used to help people communicate their emotions

Moon Picnic made this small wooden toy, which allows people to show hundreds of different expressions. It comes with a small book that encourages people to express their emotions with the toy.

Therapy Toys



■ **Figure 2.12** Toys can be used as part of therapy, such as these from designer Yaara Nusboim

These wooden toys are meant to be played with so that children can express different feelings, including anger, pain and fear. They were made by designer Yaara Nusboim, who worked with child psychologists to make toys suitable for play therapy.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A iii: Analyse existing products.

Social skills: Help others to succeed

In design we always think about the client/target audience we are designing for. Our designs are also created to solve a problem. Keep these in mind when you are trying to **describe** the impact you want your product to have. Will it solve their problem? Will it go beyond that? Will it improve their life? How is your product solving the specific problem for your specific target audience/client ... and why is your product going to be better than existing solutions? Keeping this last part in mind will help you to set a challenging goal and high expectations for yourself.

Human-centred design

Many design companies use 'human-centered design'. This is where designers focus on the human perspective throughout the design process. Strategies to help you explore this perspective might include working directly with the people impacted by the problem and your solution, involving them in the process through brainstorming and interviewing, and getting regular feedback and input. When you don't have access to these people, you can try to take their perspective through brainstorming, creating empathy maps and role-playing.

Explore more:

- www.wired.com/insights/2013/12/human-centered-design-matters
- www.designkit.org/human-centered-design

Is a problem shared a problem halved?

ACTIVITY: Design brief



■ ATL

■ Communication skills: Paraphrase accurately and concisely

At the start of this chapter, you **defined** the problem you want to solve.

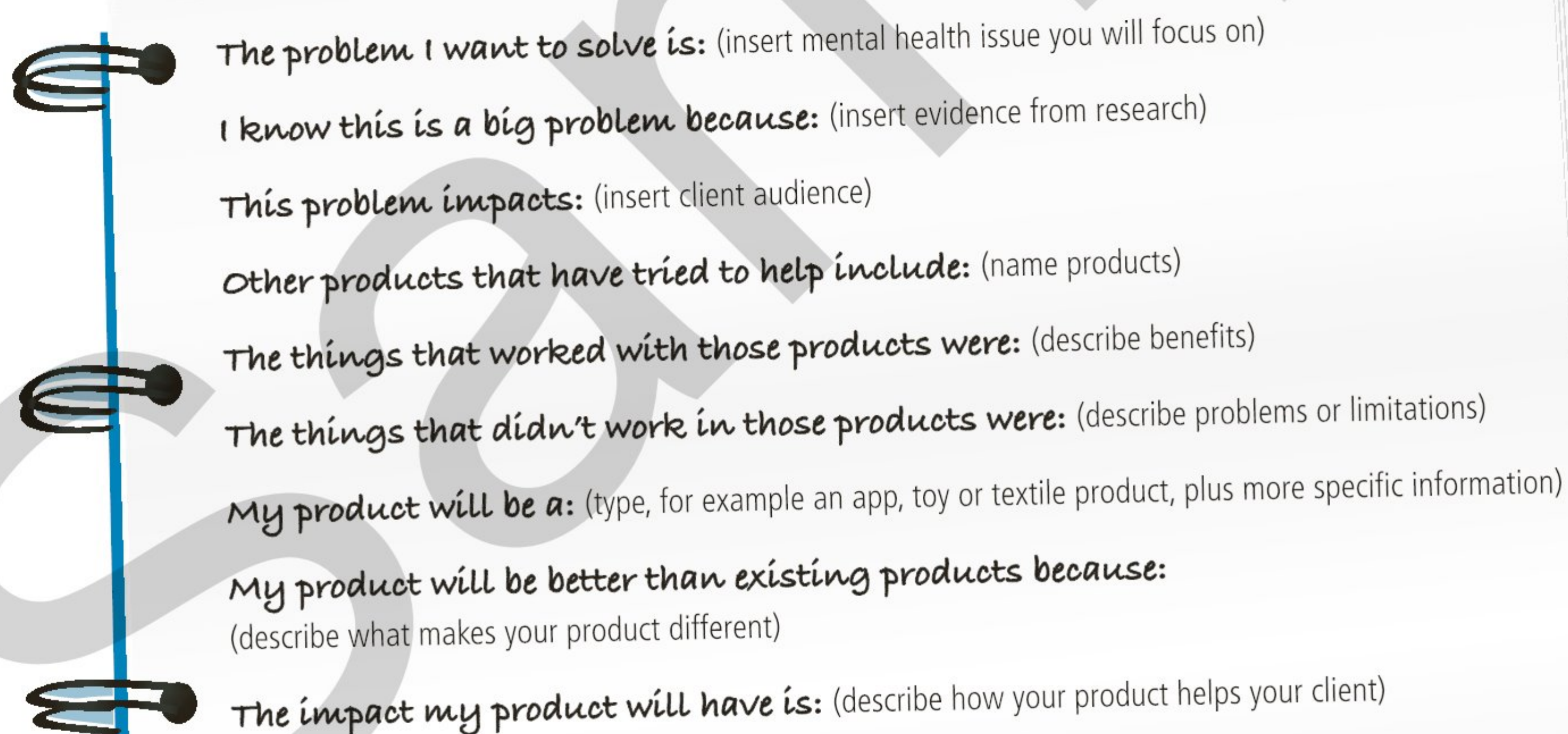
You looked at who is affected by it and how bad the problem is.

You then looked at how other people are trying to solve the problem.

Now, in your design **brief**, you need to say how you will solve the problem.

When writing your design brief, you must **summarize** the information you have already uncovered, but make sure you are clear and concise. Include all the most important parts from Criterion A i–iii. You might want to add one or two facts from your research that were most important to you. As you previously explored user experience, make sure to include why you believe your product will be user-friendly.

Some sentence starters that might help include:

- 
- The problem I want to solve is: (insert mental health issue you will focus on)
 - I know this is a big problem because: (insert evidence from research)
 - This problem impacts: (insert client audience)
 - Other products that have tried to help include: (name products)
 - The things that worked with those products were: (describe benefits)
 - The things that didn't work in those products were: (describe problems or limitations)
 - My product will be a: (type, for example an app, toy or textile product, plus more specific information)
 - My product will be better than existing products because: (describe what makes your product different)
 - The impact my product will have is: (describe how your product helps your client)

■ **Figure 2.13** Examples of sentence starters for a design brief

Hint

The 'Word, phrase, sentence' activity you completed earlier could be useful when writing your design brief. You could either make sure the words that you felt were important are included in your brief, or you could ask someone to look at your design brief and to pull out an important word, phrase and sentence.

◆ Assessment opportunities

- ◆ This activity could be assessed using Criterion A iv: Develop a design brief.



ACTIVITY: Design specifications

■ ATL

■ Collaboration skills: Help others to succeed

When writing design **specifications**, you normally think about how your organizational skills can help you. You may already have a way that you organize your specifications – for example, using ACCESS FM (Aesthetics, Cost, Customer, Environment, Size, Safety, Function and Materials). Maybe you have a way you lay these out, such as making a table with a column for each specification, another for your reason (based on research) and another for **testing** methods. For this unit, however, we really want to focus on user experience, with a focus on helping others succeed.

For your specifications here, you may want to use the headings from Figure 2.7 on page 35. This means you will be making specifications around how usable, useful, findable, credible, accessible, desirable and, most importantly, valuable your product is. You may also want to combine these specifications with some that you are more used to using.

Remember that you want your product to have a positive impact on your client (for example, a teenager) and on the people connected to them (for example, the teenager's family). As IB designers we also make sure we are caring and thinking ethically when making design choices, so you might also think about the impact on those involved with making your product (for example, if you are using wood, is it sourced in a way that is good to people, the planet and the environment?).

Remember to **justify** your specifications. This should be based on research, which could include interviews with your expert or client. Although 'designing testing methods' comes at a later stage of the MYP design cycle, it is also useful to add a column for testing methods to your specifications. Here you might write the type of specification, for example, **user trial** or **performance test**. Later you will **develop** these further; for example, if you decide to do a user trial, you will decide how long the person will try the product and how.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B ii: Develop design specifications and D i: Develop testing methods.

ACTIVITY: Key terms

Check you know your tests from your trials by matching these key terms with their correct definition.

- A Authentic tests**
B Expert appraisal

- C Field test**
D Performance test

- E Product testing**
F User trial

- 1 A type of product testing that relies on the knowledge of an expert in the operation of a product. This can include interviewing an expert, beta testing and consumer testing.
- 2 A type of product test carried out by allowing the target market to interact with the product/solution. It involves the observation of people using a product and collection of their comments. It normally focuses on usability and intuitive interaction.
- 3 An evaluation of the actual performance of a product within the task or learning objective using the conditions under which it will be performed and the absolute standard for acceptable performance.
- 4 The tests are relevant to the project and are completed by appropriate testers to gain high-quality quantitative and qualitative feedback.
- 5 A type of product testing that tests the performance of a new product under the conditions it will be used in; it normally focuses on aspects of **functionality** (**durability**, **robustness**, suitability to its environment, and so on).
- 6 This is a stage in the design process where versions of products (for example, **prototypes**) are tested against the design need (**specification**), applied to the context and presented to the end-user or target audience. These tests may include the collection and analysis of data.
Types of testing include:
 - user trial and observation: (usability and intuitiveness)
 - field/performance test: (functionality and performance)
 - expert appraisal: (beta testing, consumer testing).

(A4, B1, C5, D3, E6, F2)

ACTIVITY: What are my initial ideas?

■ ATL

- Creative-thinking skills: Apply existing knowledge to generate new ideas, products or processes

Now it's time to start sketching your initial ideas. Make sure your priority is a positive user experience. How can you make sure that your object is usable, useful, findable, credible, accessible, desirable and valuable to the user? Use the knowledge you have already gained from your initial research to help you with this – remember, every stage of the MYP design cycle is connected.

You might want to think about how it feels to interact with your product. If you are making a physical product, will it fit in someone's hand? Will the product feel soft? If you are making a digital product, will it be easy to navigate? Will the product be nice to look at? Draw at least five different ideas, with clear annotations.

Before sharing your ideas with others (your client and chosen expert) to gather feedback, you should do some self-assessment. This will help you to improve the initial ideas before gathering a first round of feedback.

Try using the thinking routine 'Imagine if' to assess your first sketches.

Consider the parts, purposes and people who will interact with your product and then ask what ways it could be made more:

- **effective**
- **efficient**
- **ethical**
- **beautiful?**

After you have **developed** your ideas as much as you can, gather feedback from your client and expert. You may wish to gather additional feedback from classmates or your family.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B i: Develop design ideas.

ACTIVITY: Which idea will you develop and why?

■ ATL

- Collaboration skills: Listen actively to other perspectives and ideas

Sometimes when you are creating your initial sketches, you have a clear idea which one you like best and want to develop. This can be dangerous as it can lead you to ignore feedback and not develop ideas further. It also can stop you making the best possible product.

Write down which idea you want to **develop** and **justify** your decision.

Your decision should be based on:

- feedback from your client
- feedback from your expert
- reviewing how many of your specifications the design meets
- additional feedback from your classmates or family.

Try to include quotes or **create** a table to show how many specifications the idea meets. This will really help you to **justify** your decision.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B iii: Present and justify the chosen design.

ACTIVITY: Getting ready to create!

■ ATL

- Organization skills: Set goals that are challenging and realistic

Before you start making your final product, it is sensible to **develop** your planning/drawing diagrams and also to **develop** a logical plan.

- **Develop your initial drawing further.** This might mean drawing the item to scale, adding annotations, deciding on the exact materials you will use or even drawing the item from multiple angles.
- **Now make a logical plan.** This might be a step-by-step plan or it might be in a table. What do you need to do in order to make the final product? How much time do you have left? What tools and materials will you need? How will you be able to track your progress? It might be wise to include a 'check-in' with your expert or client during this process – allow them the opportunity to see the work in progress and give you feedback.

Imagine you give your final drawing(s) and your plan to another designer. How closely will the product they make match what you have planned? If the plan is not detailed enough, go back and add more information.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B iv: Develop planning sketches and C i: Construct a logical plan.



ACTIVITY: Documenting the process

■ ATL

■ Communication skills: Organize and depict information logically



■ **Figure 2.14** Designers working on a project

Often in design class you should take and annotate photographs or screenshots while making a project, so that you can show your technical skills and that you followed your plan. You can also use this to show and **justify** any changes you made along the way.

For this project, try to make a video. You might combine photographs of different stages with text to **explain** to the viewer what they are seeing. You might use video, including time-lapse, to quickly show the viewer something you have worked on. You might have little clips of video where you are describing what you are doing or when you are getting feedback. You could even make the video show your logical plan, with you completing each step, or you could show your final diagram/drawing against the product.

Make sure you really show off your technical skills. If you are using a complex piece of machinery, show this off. If you are writing complex code, show this off. If you spent a long time making a visual, show this off. Sometimes when people only look at a final product, they do not realize all the hard work that goes on behind the scenes.

Make sure the video shows your design process in a logical way. Will it make sense to someone who knows nothing about the product? Will it follow along with your logical plan? Will your client be able to see all the attention to detail you put into making the product?

Creating a video can really help a designer to **evaluate** their own skills. It is also a great way of showing all the hard work that went into the product. Many designers record themselves making their products, then share these with others, so they may also make the same product. Creating a video can also keep us honest – if you know you are sharing the process, you won't rush your work, skip steps or make changes out of convenience. If you are making any changes to your original design and plan, make sure you **justify** why in the video.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion C ii: Demonstrate technical skills, C iii: Follow the plan to create the solution and C iv: Justify changes made to the design.

ACTIVITY: Design testing methods



■ ATL

- Collaboration skills: Listen actively to other perspectives and ideas



■ **Figure 2.15** User trials – developing testing methods

When writing your design specifications, you recorded how you will test them by noting down a testing type. This might have been anything from a user trial to **expert appraisal**. Now it's time to **develop** this further. If you will be doing a user trial, what do you want them to do with your product? How long will they test the product for? If you are getting expert appraisal, exactly what questions will you ask them?

When **developing** your testing methods further, make sure you are able to evaluate every specification. You also want to make sure that you are being objective and are able to gather data to show what worked and what didn't work.

Once you have designed your testing methods, run your tests and gathered feedback, you can fully **evaluate** your product. Without this data it is easy for a designer to just give their opinion on their product. By gathering data, you are able to critically **evaluate** the success of your product and **explain** what could be improved. Make sure you use this data in your evaluation – this may include quotes from an interview or event graphs and tables.

Finally, look back at the original problem you are trying to solve. Using your feedback, **describe** the impact of your product.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion D ii: Evaluate the success of the solution, D iii: Explain how to improve the solution and D iv: Explain the impact of the solution.

DISCUSS

You have now created a product that allows someone to share, track or express their emotions. With a partner or small group, discuss the following:

‘Is a problem shared a problem halved?’

Make sure you **explain** your answer with clear reasons. You may need to use evidence collected throughout the unit, from your initial research through to the feedback on your final product.

CIRCLE OF ACTION

This routine will help you reflect on the purpose of the unit and may lead to you taking further action. Think about mental health in general or the specific topic you focused on, before thinking about the contributions you can make.

What can I do to contribute:

- in my inner circle (of friends, family, the people I know)
- in my community (my school, my neighbourhood)
- in the world (beyond my immediate environment)?

! Take action

- ! Find out what is already happening in the school to support student and teacher well-being. Is there anything else you could do? You may think about gathering school-wide data about the community’s well-being or even starting your own initiative to improve this. Examples could include creating safe spaces; raising awareness of trusted adults, such as counsellors; making improvements to the school’s advisory/homeroom curriculum; starting a mentor programme; inviting an expert in or speaking in assembly.

Reflection

In this unit you found out about different mental health problems affecting young people. You explored how design can help people discuss mental health issues. You took action by **designing** a product that allows people to express their emotions.

Use this table to reflect on your own learning in this chapter.					
Questions we asked	Answers we found	Any further questions now?			
Factual: What mental health issues do children and teenagers often face? What psychological issues do people find it hard to discuss?					
Conceptual: Why do we find it hard to say how we feel?					
Debatable: Is a problem shared a problem halved?					
Approaches to Learning you used in this chapter:	Description – what new skills did you learn?	How well did you master the skills?			
		Novice	Learner	Practitioner	Expert
Communication skills					
Collaboration skills					
Organization skills					
Reflection skills					
Information literacy skills					
Critical-thinking skills					
Creative-thinking skills					
Learner profile attribute(s)	Reflect on the importance of caring for your learning in this chapter.				
Caring					

3

What features can designers use to make a fun playground?

- Resources should be created to promote play in our communities.

CONSIDER THESE QUESTIONS:

Factual:

What do playgrounds look like across the world? What memories do you have of playgrounds? How does play benefit us?

Conceptual:

Why do we play? What role does play have in our community?

Debatable:

Should organizations, such as charities and local governments, be focusing on building playgrounds or is their time and money best spent doing something else?

Now **share** and **compare** your thoughts and ideas with your partner, or with the whole class.

KEY WORDS

risky play

storyboard



Figure 3.1 Grant Park, Chicago, United States

IN THIS CHAPTER, WE WILL ...

- find out about the importance of play
- explore examples of playground design
- take action by designing our own playground.



● We will reflect on this learner profile attribute:

● Risk-taker

Modern playgrounds are often overly safe, and sometimes quite boring. You will be coming up with new ideas and innovative solutions for an exciting playground design.

◆ Assessment opportunities in this chapter:

◆ **Criterion A:** Inquiring and analysing

◆ **Criterion B:** Developing ideas

◆ **Criterion C:** Creating the solution

◆ **Criterion D:** Evaluating

INTRODUCTION

In this unit you will be exploring the importance of play. You will look at Article 31 of the Convention on the Rights of the Child, which states the importance of play for all children.

You will think about the benefits that play can bring to an individual and to communities. As a final product, you may choose to make a physical or digital 3-D model, or may even choose to make some playground equipment. One of the focuses of this unit is how you can use storyboards during different parts of the design cycle, to reflect how people use or will use a product and to help you to review the **impact** the product can have on the user.

THINK–PAIR–SHARE

With a partner discuss the following question: 'What memories do you have of playgrounds?'

Can you remember how you played in playgrounds? Which is your favourite playground? Who did you interact with? What were your favourite activities/ equipment to use in the playground? Did you ever get hurt while at the playground? How close was the playground to where you lived? Would your childhood have been very different without playgrounds? Would you be very different without playgrounds?

You may wish to write down some key points from your discussion, as you may want to use your ideas for Criterion A.

■ These Approaches to Learning (ATL) skills will be useful ...

- | | |
|------------------------|-------------------------------|
| ■ Communication skills | ■ Information literacy skills |
| ■ Collaboration skills | ■ Critical-thinking skills |
| ■ Organization skills | ■ Creative-thinking skills |
| ■ Reflection skills | |

What do playgrounds look like across the world?

CONVENTION ON THE RIGHTS OF THE CHILD

The UN's Convention on the Rights of the Child was signed at the end of 1989 and became effective almost a year later. The treaty lays out various rights for children, including social, health, economic, political, civil and cultural rights.

As of September 2020, all countries that are members of the UN have signed the treaty, apart from a small group including Somalia and the United States of America. Although many countries have signed the treaty, some have put declarations and reservations alongside, which means they might not fully support every right or may have different interpretations of the rights.



■ **Figure 3.2** Children's rights are recognised in the UN's Convention on the Rights of the Child

In this chapter we will be focusing on Article 31.1.

Article 31

1. States Parties recognize the right of the child to rest and leisure, to engage in play and recreational activities appropriate to the age of the child and to participate freely in cultural life and the arts.

To read all the rights visit:

www.unicef.org/child-rights-convention/convention-text#

You can also read a child-friendly version here:

www.unicef.org/child-rights-convention/convention-text-childrens-version

If you want to learn more, you can test yourselves with UNICEF's Kahoots: https://create.kahoot.it/pages/32c22a99-b815-4a16-8bf1-ec2915c82986?_=1571351723

THINK-PAIR-SHARE

Why do you think that play is included as a right for all children?

You should write down some key points from your discussion, as you may want to use your ideas for Criterion A.



Design situation

Your city/town has been inspired by the many playful cities around the world and also wants to become a playful city/town. Part of this initiative will be adding more playgrounds to parks and schools. There is a local grant available to make your community more playful. The grant provider is looking for submissions to add new playgrounds or replace outdated and dangerous playgrounds in local parks or schools. You will have to select the exact location and make sure your designs are appropriate for that place, which might mean taking advantage of the local landscape or climate. You will have to come up with several designs and show the **impact** it would have on individuals in your community and on the wider community.



■ **Figure 3.3** Inspiration for playground design



WHAT ARE PLAYFUL CITIES?

Many cities around the world have decided to put a focus on play. This is usually done through creating more playgrounds, opportunities for play around the city and also through special events, including festivals and exhibitions.

An example of this is the Danish city of Billund, which calls itself the Capital of Children. This is where LEGO originates from. The city already has a LEGOLAND, but has recently opened LEGO House, which calls itself an 'experience center', similar to a children's museum. The city also has WOW PARK, a playground, and Lalandia, which features a waterpark, climbing tower, playland and more.

Billund's Capital of Children website introduces itself by saying: 'In Billund, we believe that children are just as capable as adults. This makes Billund Municipality a very special place in the world. A place that insists on learning through play, and when Billund comes together as a whole to build the Capital of Children, it is not for fun. It is for the future.'

Learn more about Billund here:

www.capitalofchildren.com

Other playful cities:

- www.aplayfulcity.com
- <https://urbact.eu/welcome-european-playful-cities>
- www.citiesforplay.com
- <https://kaboom.org/cities>

DISCUSS

The organization behind the Capital of Children says: 'It is not for fun. It is for the future.' What do they mean? Discuss with a partner.

ACTIVITY: Playful quotes

■ ATL

- Critical-thinking skills: Gather and organize relevant information to formulate an argument

Read the following quotes, then pick out the one that resonates with you the most. **Explain** why you think the quote is important.

Play is the foundation of learning, creativity, self-expression, and constructive problem-solving. It's how children wrestle with life to make it meaningful.
Susan Linn, Contemporary American psychiatrist

Play is foundational for bonding relationships and fostering tolerance. It's where we learn to trust and where we learn about the rules of the game. Play increases creativity and resilience, and it's all about the generation of diversity – diversity of interactions, diversity of behaviours, diversity of connections.
Isabel Behncke, Field ethologist and primatologist

Play is the highest form of research.
Albert Einstein

Children need the freedom and time to play. Play is not a luxury. Play is a necessity.
Kay Redfield Jamison, Contemporary American professor of psychiatry

Play is our brain's favourite way of learning.
Diane Ackerman, Contemporary American author

Almost all creativity involves purposeful play.
Abraham Maslow, American psychologist

◆ Assessment opportunities

- ◆ You may wish to use this quote, along with your justification for its importance, in Criterion A i or A iv. You may also choose to use this when you are explaining the overall impact on your final product.

■ **Figure 3.4** Quotes about play

What role does play have in our community?

WHY IS PLAY SO IMPORTANT ANYWAY?

ACTIVITY: Part 1 – Research into storyboards

■ ATL

- Information literacy skills: Collect and analyse data to identify solutions and make informed decisions

We have already spoken about children having a right to play and have also reflected on how play impacted us growing up. Now it is time to do research to find evidence of the importance of play. You may want to look at both the psychological impact, for example building social skills, and the physical impact, for example how playground play impacts your fitness.

Some key words and phrases that will help you with your research include **benefits of play**, **benefits of playgrounds**, **importance of play** and **importance of playgrounds**.

EXTENSION

To learn more about the benefits of playgrounds watch:

Designing playgrounds for happier, healthier kids:

<https://youtu.be/UZCbNstq2Uk>

or

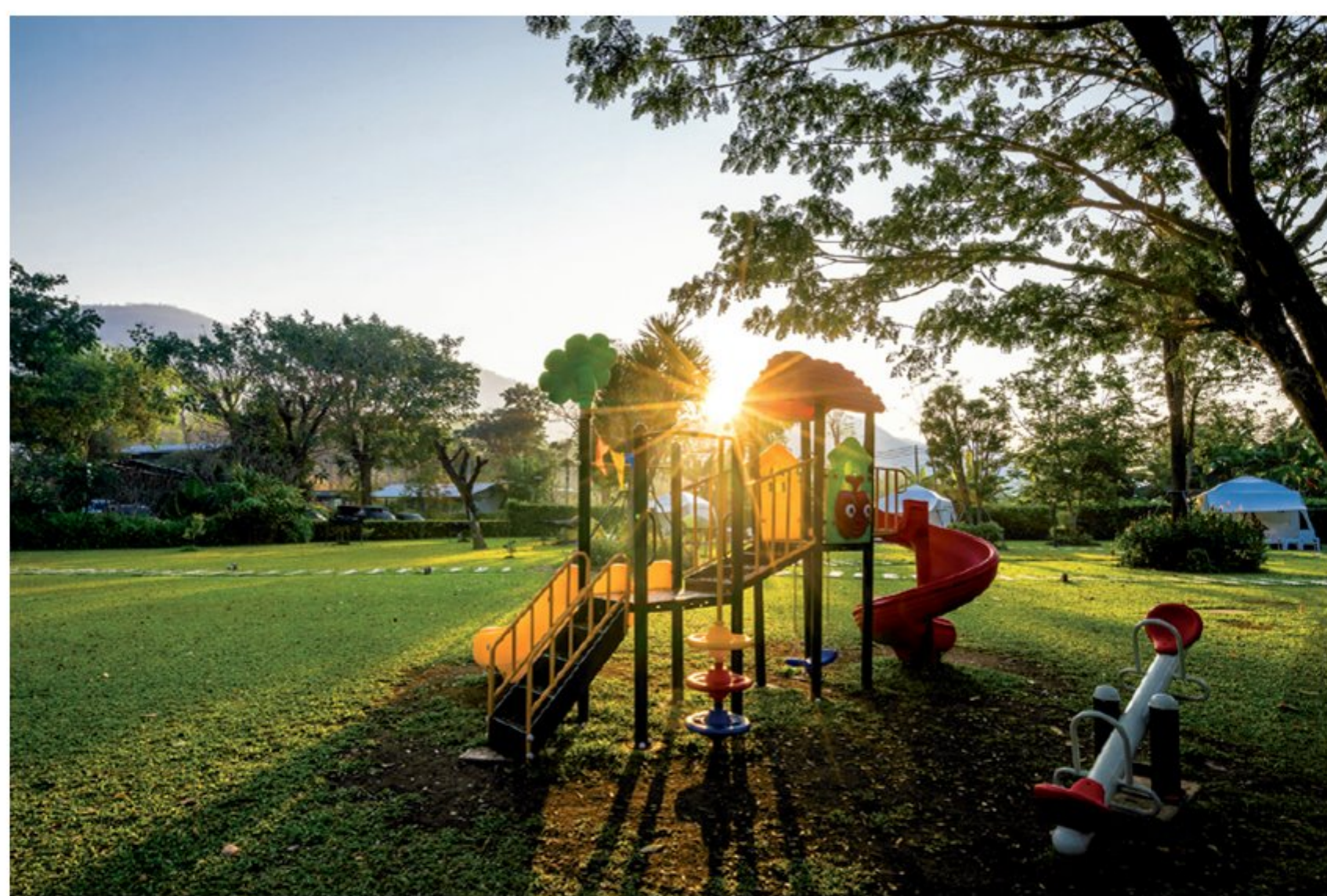
Key benefits of playgrounds on early childhood development:

<https://youtu.be/K2hSFPLVgoQ>

ACTIVITY: Where will my playground go?

■ ATL

- Information literacy skills: Collect and analyse data to identify solutions and make informed decisions



■ **Figure 3.5** Park playground



■ **Figure 3.6** School playground

You may have already decided if you want your playground to be designed for a school or a park, but now you need to get specific. If you are choosing a school, you should pick out which school and where.

For example, will it appear in the north-east part of the primary school playground? Maybe it will appear in a park near your house, next to the east entrance, between an orchard and a pond.

Before you begin hunting for the perfect location, make yourself a set of mini criteria. Maybe you will look for a space that is near a school, so children can play there after the end of the school day. Maybe you will look for a place where there are lots of small hills, which you can incorporate in your design. Maybe you will choose a space near a library and **design** a book-themed playground. Maybe you look for a space where there are not many other playgrounds around. Maybe you will **design** a playground for a school that has no permanent play equipment or a really outdated playground.

Once you have decided on your criteria, or your wish list for your perfect playground space, indicate which is the biggest priority for you. Maybe it is super important that the playground is near public transport, but not so important that the space has lots of trees.

Now it's time to get location hunting. You can do this by visiting the locations yourself and taking photographs, or you might want to use an online map such as Google Earth. Make sure you gather lots of photographs or screenshots to show how the space looks currently. You should annotate these to show how they meet your criteria and to show any existing problems or potential benefits of the space. You may wish to go a step further and research more information that can help you. For example, what plants are in the space? Who currently uses the space? What public resources are nearby? Is there anything else that would attract children and families to that area?

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A ii: Identify and prioritize the research.

How does play benefit us?

ACTIVITY: Part 2 – Create your storyboard

■ ATL

- Information literacy skills: Collect and analyse data to identify solutions and make informed decisions

With the information you have learnt about the benefits, start to picture how different people use and benefit from playgrounds. You might wish to start looking at how individuals in your community use playgrounds, including toddlers, children, pre-teens and parents. You then might want to think about who those individuals interact with and think about group experiences, for example a parent with a toddler, siblings or groups of friends.

Using what you have learnt from your research and from reflecting on how different community members interact with playgrounds, **create** a storyboard to show why playgrounds are important to these individuals and groups in your community.

Your storyboard should show various community members at the same playground. Use labels so it is clear what is happening and add the benefits. You might even want to add quotes from your research to your annotations. If you are not comfortable with your drawing, you could do stick figures or use photographs.

The benefit of storyboarding is that you can really show how people interact with products. This also helps you understand how users interact with a product.



■ **Figure 3.7** An example of a storyboard

EXTENSION

Here are some storyboard generators you can have a look at for inspiration:

- <https://boords.com>
- www.canva.com/create/storyboards
- www.studiobinder.com/blog/downloads/storyboard-template

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A i: Explain and justify the need.

SEE-THINK-WONDER

■ ATL

■ Critical-thinking skills: Practise observing carefully in order to recognize problems

You may wish to use the thinking routine ‘See-Think-Wonder’ to help you understand the benefits and potential problems with the area you have selected. This may be useful when you are **justifying** your decision to choose this space when writing your design **brief** and it may also help you when you generate your initial ideas. If you have found a few different locations and are struggling to narrow down your selection, completing See-Think-Wonder may help you see which option has the most potential.

Use the following prompts to better understand the existing playground or space. You may wish to write your answers in a table.

- What do you **see**?
- What do you **think** about that?
- What does it make you **wonder**?

◆ Assessment opportunities

◆ This activity can be assessed using Criterion A iii: Analysing existing products.

◆ You may use some of the answers to justify your decision on the location in your design brief (Criterion A iv).

SEE	THINK	WONDER
Swings	• This playground has been here for a long time (as the paint is faded)	• Is this playground still as popular as it was when it first opened?
Climbing frame	• The sand might make it easy to get mucky at the park	• Are there any benches or places for parents to sit?
Rope ladders	• As the wood is old it might be easy to get splinters	• How quickly does the sand dry after it has rained?
Sand	• There are lots of levels and different parts of the structure, so children probably play chase here	• How often are repairs and updates done?
Faded paint		• Is anything here suitable for younger children/toddlers?
Wood		
Roofs		
Different level		

■ **Table 3.1** Example of a See-Think-Wonder table



■ **Figure 3.8** This playground is mostly made of wood and has minimal added colour



■ **Figure 3.9** This playground is mostly made of metal and has lots of bright colours

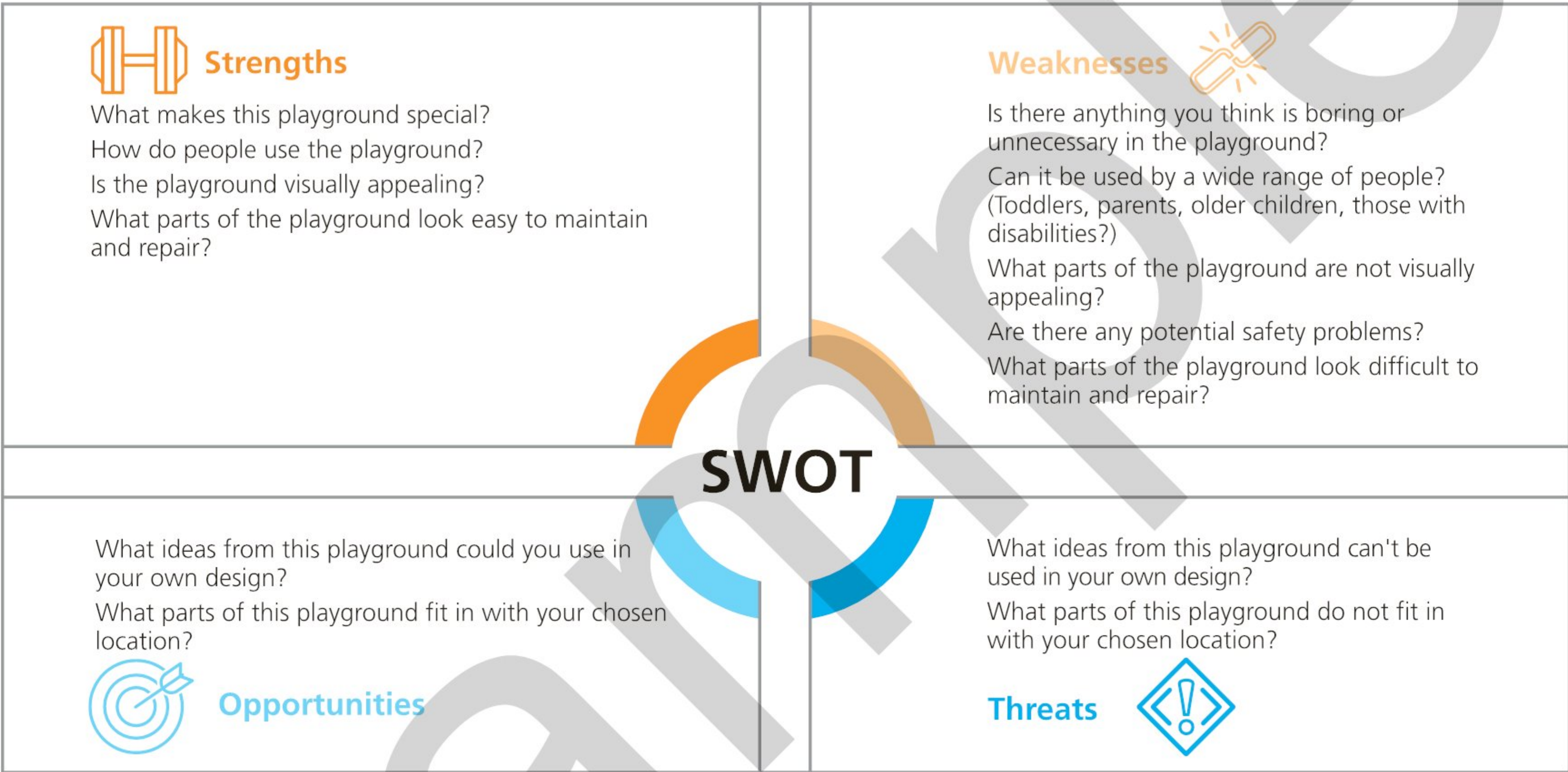
ACTIVITY: Inspirational playgrounds

■ ATL

■ Critical-thinking skills: Practise observing carefully in order to recognize problems

Let’s now look at some amazing or unusual playgrounds from around the world. This will help you when you come to generate ideas for your own playground design.

When you have selected some playgrounds you want to explore, you will do a SWOT analysis. This will have you look at the strengths, weaknesses, opportunities and threats of the playgrounds. SWOT analysis is usually used by organizations and companies to analyse themselves, but it can also be useful to **analyse** existing products. It will allow you to examine the strengths and weaknesses of the playground then, when you examine the opportunities and threats, you can really think about the features or ideas you might want to bring into your own design.



■ **Figure 3.10** SWOT analysis



■ **Figure 3.11** Does this playground look safe to you?



■ **Figure 3.12** This playground has been adapted for children with additional needs

What memories do you have of playgrounds?

If you identified any particular problems when **analysing** an existing playground or the space you want to use, you may want to keep these in mind when **analysing** other playgrounds. For example, if you noticed that there was no equipment for toddlers, do the other playgrounds you are **analysing** have this? If you have picked a location near a hospital, what accessibility features might you need to think about? If it is near a school, how old are the children at the school and what play spaces would be appropriate? Are there any other considerations linked to the landscape or weather you might need to consider?

EXTENSION

Other playgrounds and playground designers worth exploring include:

- **Barefoot Parks** (also known as Barfuss-Pfad): Take your shoes off and explore nature by walking over different materials.
- **Isamu Noguchi**: This American–Japanese artist was famous for his work as a sculptor, but also designed many playgrounds including his famous playscape in Atlanta’s Piedmont Park.
- **Imagination Playground**: Who said playgrounds have to be static? Imagination playground makes a large construction product (think LEGO, but big and made of a firm foam) so that children can build their own play spaces. You can find their equipment in schools, museums and galleries.
- **Kaboom**: This organization works with communities to build playgrounds. Their driving mission is about creating playspace equity. Their website shows some of the tools they use to gather **feedback** and ideas from children.
- **Monstrum**: Danish playground designers. Although much of their work appears in Denmark, you can find their playgrounds in many different countries. They have even published books about their designs.
- **Nishi-Rokugō Park**: A playground in Tokyo made almost completely of used tyres. The playground includes a jungle gym, a giant swing and even an enormous Godzilla. The space uses over 3000 recycled tyres from nearby manufacturing plants.
- **St Louis City Museum**: Is it an art installation? Is it a playground for all ages? You decide.
- **The Urban Conga**: This company designs open-ended play structures, including playgrounds, as well as chess tables and ping-pong tables. Much of their work includes a musical element.

ACTIVITY: Some playgrounds to explore

■ ATL

- Information literacy skills: Collect and analyse data to identify solutions and make informed decisions

Although you might already know which playgrounds you want to **analyse** or you might have found your own online, here are some interesting playgrounds worth taking a look at.

If you were asked to rebuild one of these playgrounds, think about:

- what you would keep, and why
- what you would get rid of, and why
- what you would add, and why.

Clemyjontri Park



- **Figure 3.13** You can see how a design is vital in making sure everyone can make the most of a playground

Clemyjontri Park is a beautiful, accessible playground in Virginia in the United States. The playground is accessible for those who use wheelchairs, walkers or braces. The playspace incorporates braille and the design has taken

into consideration sensory and developmental disabilities too. Often playgrounds have separate equipment for those with different needs, such as wheelchair-friendly swings, but Clemyjontri Park has been designed so that children of all abilities can play side by side.

www.fairfaxcounty.gov/parks/clemyjontri

Play Concept



- **Figure 3.14** You can see how one company varies their playground designs in different locations

Play Concept is a Hong Kong-based playground design company. It designs both indoor and outdoor spaces and they often have a theme, such as ice cream or bugs and insects. Play Concept has installed playgrounds in many different locations, from hotels through to international schools.

Play Action International

<https://playactioninternational.org>

Play Action International is a charity that provides playgrounds to children in East Africa. They started by focusing on Uganda but have now expanded their reach. They have made playgrounds that have been used by over half a million children. Play Action International has worked with and in refugee settlements, urban slums, rural communities, schools, hospitals and more. The playgrounds use high-quality materials, which last at least ten years. They are designed with community members and are maintained by local committees. They use local materials and are installed by a local team, which also provides apprenticeships to young people. As many of their playgrounds are installed in schools, they also provide materials for teachers to help them use the space as a teaching tool.



■ **Figure 3.15** You can see how innovative designs are often needed depending on the purpose and resources available for the playground

Futuroscope

www.futuroscope.com/en



■ **Figure 3.16** You can see how playgrounds are used to introduce learning into play

Futuroscope is a theme park in western France with a focus on science and technology. Throughout the park there are many indoor and outdoor playgrounds. These are often themed and encourage children to use natural elements, such as water, combined with different forces to interact with the play structures. Themes of the play spaces include aviation, water play, firefighting and running a small city. They have traditional equipment including slides and swings, but also water trampolines and fire engines.

Many theme parks and museums, especially those aimed at younger children, such as LEGOLAND and science museums, have incredible playgrounds you might want to investigate.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A iii: Analyse existing products.

Check these links for more inspiration:

- www.dezeen.com/tag/playgrounds
- <https://land8.com/the-10-best-playgrounds-of-the-world>
- www.mentalfloss.com/article/64488/16-coolest-playgrounds-world
- www.nationalgeographic.com/travel/lists/activities/best-playgrounds-around-world-family-travel

Additional reading

Are playgrounds too safe? Some play specialists say yes:

www.wbur.org/hereandnow/2020/02/21/risky-playgrounds-safety

The danger of making playgrounds too safe:

www.abc.net.au/life/the-danger-of-making-playgrounds-too-safe/11834900

Can playgrounds be too safe?:

www.nytimes.com/2011/07/19/science/19tierney.html

In Britain's playgrounds, 'bringing in risk' to build resilience:

www.nytimes.com/2018/03/10/world/europe/britain-playgrounds-risk.html

'We're cosseting our kids' – the war against today's dangerously dull playgrounds: www.theguardian.com/artanddesign/2019/oct/31/were-cosseting-our-kids-the-war-against-todays-dangerously-dull-playgrounds-welcome

Rethinking 'ultra-safe' playgrounds: Why it's time to bring back 'thrill-provoking' equipment for kids: www.washingtonpost.com/news/answer-sheet/wp/2015/11/29/rethinking-ultra-safe-playgrounds-why-its-time-to-bring-back-thrill-provoking-equipment-for-kids

YouTube: Inside NYC's riskiest playground where parents aren't allowed inside | NBC News: www.youtube.com/watch?v=dZxjZfpK8Qo&feature=youtu.be

CREATIVE HUNT

■ ATL

- Critical-thinking skills: Analyse complex concepts and projects into their constituent parts and synthesize them to create new understanding

If the SWOT analysis did not help you, you could try using the thinking routine 'Creative Hunt' instead.

- What's the main purpose here? (What types of play can happen here?)
- What are the parts and their purposes? (What are the different pieces of equipment and what are they used for?)
- Which are especially smart or creative? (What stands out to you? What might you use in your own design?)
- Who is the audience for this? (Who uses the different parts of the playground and how?)

Creativity does not just happen magically. There are many activities we can do that help us to draw out different ideas. The focus of this activity is to recognize the creativity in the things around us, so they might inspire us.

DISCUSS

With a partner, answer the following questions:

- Why do we play?
- What role does play have in our community?
- How does play benefit us?

Use the playgrounds you have **analysed** to support your answers.

ACTIVITY: Risky playgrounds

■ ATL

■ Critical-thinking skills: Evaluate and manage risk



■ **Figure 3.17** How safe should playgrounds be?

The term 'adventure playground' usually means playgrounds made of wood with lots of rope swings. They are very popular in the UK. However, they originally referred to large unused spaces, where wood, building equipment and other resources would be used for free play.

Watch the following video: Why safe playgrounds aren't great for kids:
www.youtube.com/watch?v=lztEnBFN5zU&feature=youtu.be&ab_channel=Vox

Read the following quote:

*'**Risky play** is really important for kids – all kids – because it teaches hazard assessment, it teaches delayed gratification, it teaches resilience, it teaches confidence. When kids get outside and practice bravery, they learn valuable life lessons.'*

(Caroline Paul, Author and former firefighter)

How safe should playgrounds be?

You may wish to think about the benefits of being a risk-taker (part of the IB learner profile) and how this fits in here. Go back and look at the playgrounds you previously analysed. How safe are they?

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A iii: Analyse existing products and B i: Developing design ideas.

DISCUSS

In this chapter we've looked at some themed and un-themed playgrounds.

Do you think your playground will have a theme? Try to come up with as many different ideas for themes as you can. Share these ideas with some friends to see which they like best. Don't forget to think about which theme will best suit the community using the playspace too.

ACTIVITY: Design brief

■ ATL

■ Critical-thinking skills: Draw reasonable conclusions and generalizations

After **analysing** many playgrounds, considering your location, a possible theme and even how safe you want your play space to be, you probably have some strong ideas about your playground. For your design brief you will be bringing together all your research so far, by drawing reasonable conclusions and generalizing your findings.

Use the following sentence starters to help you start your design brief. You may then wish to reword or rephrase to give a clearer answer.

- I will be designing a playground for the location of ...
- I selected this location because ...
- The playground will be used by ...
- The playground will be made of ...
- The playground will have the theme of ... (you could also mention the style/**aesthetics** here if you don't have a theme)
- The different ways you can play there will be ...
- The playground will benefit the community because ...

Make sure you add in any additional ideas or information you want to share here.

Other options

If the sentence starters are not useful for you, you might wish to explore some other strategies for creating your design brief:

- **Elevator pitch:** Imagine you only have a short time to tell someone what you want to make and why. Think about traveling in an elevator from the ground to the 10th floor. As you have a short time only, this will help you **prioritize** the most important pieces of information.
- **List:** You may wish to **list** all the general benefits of play, as well as the benefits for your particular community. Next to each point, **describe** how your ideas help fulfil those benefits.

Hint

Make sure your design brief answers the following inquiry question 'How does play impact human development?' In your design brief you want to not only show off your ideas but show exactly why play is so important.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A iv: Develop a design brief.

ACTIVITY: Design specifications

■ ATL

- Critical-thinking skills: Identify trends and forecast possibilities

You might be used to creating detailed design **specifications** that cover a range of different specification types, from aesthetics through to materials (you should still try to cover these in your specifications, but it does not need to be laid out by type). For this chapter you are going to use a much simpler version, where you make a **list** of 'MUSTS' and 'SHOULDs'. The 'musts' are your high-priority elements, which are easy to measure/check, for example: 'The playground will be made of 80 per cent recycled materials.' The 'shoulds' may be the more aspirational elements, for example: 'The playground will have at least 100 visitors every Saturday.'

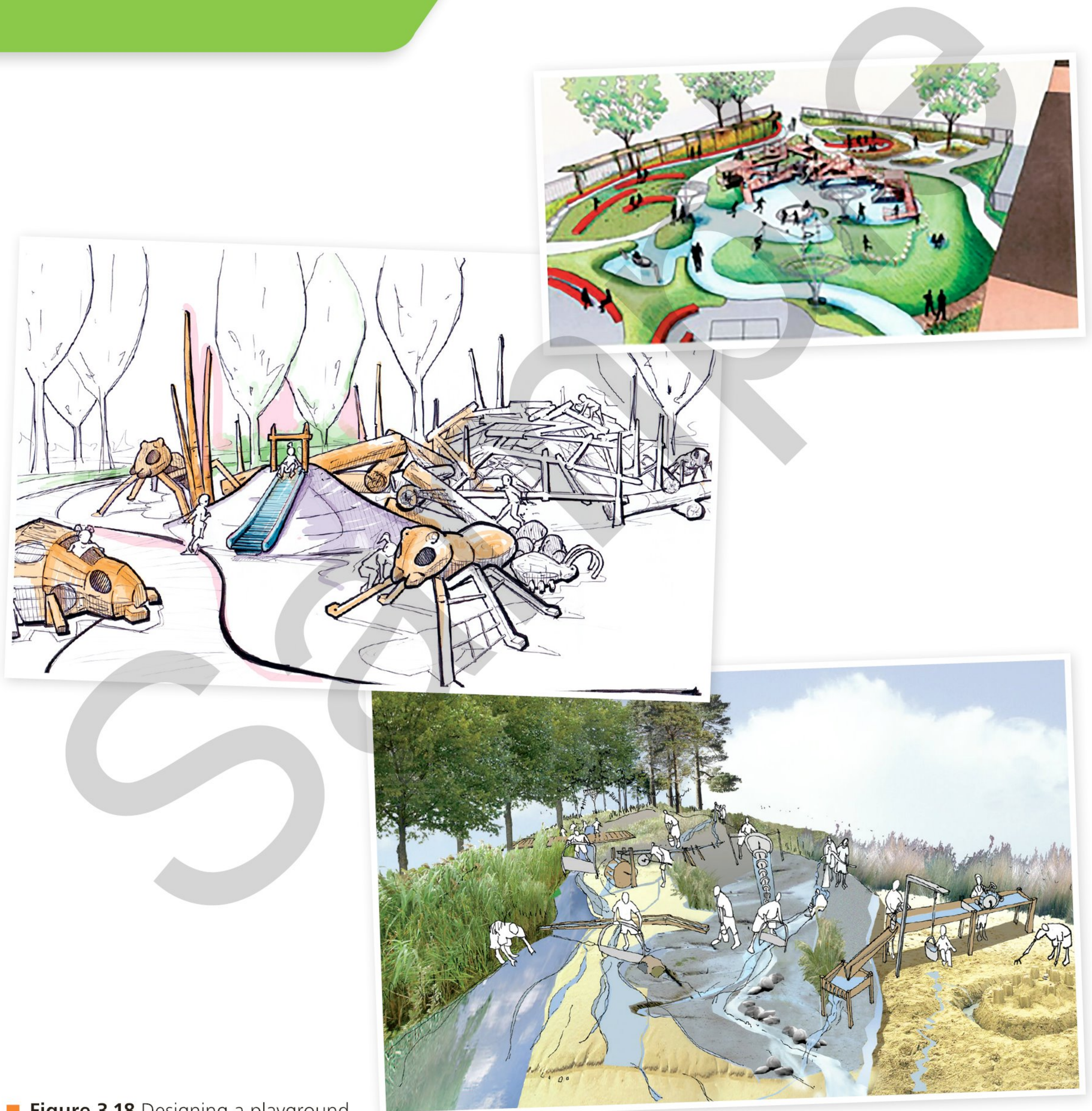
Hint

- Include any problems you are trying to solve. For example, if your playground is in an area with bad air pollution, it must include air-purifying plants.
- Make sure you are bringing in ideas from your research earlier in the chapter, from ideas you liked from existing playgrounds through to how safe your playground will be.
- Make sure your specifications lay out how the different users (from toddlers to parents) will use the space.
- Make sure your specifications tell us exactly why the playground is suitable for your community and the chosen location.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B ii: Develop a design specification.

Should organizations be focusing on building playgrounds?



■ **Figure 3.18** Designing a playground

ACTIVITY: Developing your ideas

■ ATL

■ Critical-thinking skills: Propose and evaluate a variety of solutions

Now it's time to start sketching out different ideas. As you have thought a lot about how people will interact with their playspaces, you should make sure people are included in these sketches. As you have photographs or screenshots of your current location, you might even want to lay your ideas over the top of these images, so you can picture exactly what it will look like. Make sure you add annotations to show the 'MUSTS' and 'SHOULD'S' from your specification. You should provide detailed sketches, filling a page each.

Hint

If you are still unsure of exactly how your playground will look, start by making some different mood boards (collages to bring together different ideas – this might include different equipment, playgrounds that have inspired you, different colour palettes and more).



■ **Figure 3.19** A mood board can help you develop your ideas

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B i: Developing design ideas.

ACTIVITY: Which idea should you develop further?

■ ATL

- Collaboration skills: Listen actively to other perspectives and ideas

Look at your different sketches and compare them against your 'MUSTS' and 'SHOULDs' specifications. Do any of them stand out as fulfilling more of your specifications? If yes, this is probably the idea you should **develop** further. If the choice is less obvious, remember that your 'MUSTS' are your priority. If one idea fills more 'MUSTS' then this should be the idea you develop.

You should also aim to gather feedback from other people. Think about the different users of your playground and see if you can get feedback from people that represent them, for example a parent, a young child and an older child. Remember, you are gathering feedback, so don't just ask people which idea they like

best. You need to ask them specific questions related to your specifications. The initial sketches you have made are not your final designs, so try to generate new ideas by listening to the perspective of the people you are interviewing. They may want you to combine ideas from some of the sketches or they may have new ideas to add to your own. Remember, you are always designing for someone else, not yourself, so if the overwhelming feedback favours your least favourite idea, this should still be the one you develop.

Describe the idea(s) you will **develop** further and **justify** your decision.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B iii: Present and justify the chosen design.

ACTIVITY: Gathering feedback from children

■ ATL

- Collaboration skills: Listen actively to other perspectives and ideas

Gathering feedback from young children is not as easy as gathering feedback from older people. You will need to make your questions short and simple, so they can be easily understood. You may want to interview children in a small group, so they are less nervous. You may want to ask advice from an adult who is familiar with the child, such as a parent or teacher, to help you. It is definitely worth making sure your ideas are really visual; you should **explain** your drawings clearly before gathering feedback.



ACTIVITY: Creating and following a plan to make your playground prototype



■ **Figure 3.20** Designing a playground

■ ATL

- Organization skills: Select and use technology effectively and productively

Now that you are ready to make your playground **prototype**, you will need to think about which tool will be best for sharing your ideas. Computer-aided design (**CAD**) is computer software that is used for creating both 2-D and 3-D designs. Maybe you will make a **digital 3-D model** using software like **SketchUp** or **Fusion360**. Maybe you will make a small **architectural model**, using **FoamBoard** and **Filmoplast**. Maybe you will focus on creating detailed illustrations using software like **Adobe Illustrator** or **InkScape**. Maybe you will make an **interactive 3-D/VR simulation** using **Unity** or **CoSpaces**. Maybe you have a completely different idea for how you will show your ideas. As this chapter is focusing on being a risk-taker, you may want to try a new tool or one that you need to strengthen your skills with.

Make a logical plan, describing the steps you will take to make your playground prototype. To make this easy to understand and follow, **construct** it as a table. The plan should include the materials and tools you will use, any special techniques and how much time will be spent on each step. As you are only making a prototype, your design should be done to scale, and you may need to include a key to help people understand your design.

As you work through your plan, make sure to take photographs/screenshots at key steps. You can annotate these to show off the technical skills you are using. If you have to make any changes to the plan, for example if you were sick one day or something took longer than you thought, note this down in your plan, perhaps in a different colour, or add a column for reflections and changes.

Alternatively, you might want to **create** a slidedeck, with a slide for each part of your plan. On the same slide, you can then add in photographs/screenshots of you following the plan and write down any changes you had to make. On the last slide, you can show off your final design. When showing off your final design, you may wish to include photographs of the location you selected, as well as images of people playing.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion C i: Construct a logical plan, C ii: Demonstrate technical skills, C iii: Follow the plan to create a solution and C iv: Justify changes to the plan.

ACTIVITY: Gathering feedback

■ ATL



■ Communication skills: Give and receive meaningful feedback

As you have made a prototype, and not an actual playground, you won't be able to do user trials or see people play in your space. Instead you may wish to gather feedback in a similar way to how you gathered feedback on your initial sketches. Make sure to document the methods and questions you want answered before gathering your feedback.

Then look at your 'MUSTS' and 'SHOULD'S'. Which of these can you confirm just by looking at the prototype, and which will you need feedback on to help you assess their success? Make sure you plan questions to help you do this.

Lastly, you may want to use the data you have gathered to do a SWOT analysis of your final design. This will allow you to not just focus on all the strengths and successes, but also to document ways your design could be improved.

Make sure you **present** how you gathered feedback, for example through your interviews, specification evaluation and SWOT analysis. Clearly lay out the success and show where there is room for improvement. Remember that in this chapter you are **pitching** an idea to have this playground built in your town/city. At this stage during the pitch, there is still room for improvement, so you can show your ideas and **describe** further changes you would make.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion D i: Design testing methods, D ii: Evaluate the success of the solution and D iii: Explain how to improve the solution.

Take action

- ! You could take action through designing playful products or experiences for your community. You could speak to school leaders about buying new play equipment or even upgrading the local playground. You could take action by raising money for an organization that provides play equipment or even builds playgrounds.

DISCUSS

Earlier in the chapter we explored some charities that build playgrounds for children. We've also explored many of the benefits of play. Some may argue that organizations and charities should be spending money on more critical issues, such as disease and poverty, however.

With a partner discuss the following question:

'Should organizations, such as charities and local governments, be focusing on building playgrounds or is their time and money best spent doing something else?'

EXTENSION

Explore further by seeing if there are organizations you could pitch your idea to. You might send your design to anyone from a charity that designs playgrounds, through to your actual town/city representatives. You could search online for grants, on sites like <https://kaboom.org/grants>

I USED TO THINK ... NOW I THINK ...

In this chapter you may have thought more about why play is so important and what barriers there might be to giving everyone access to play.

Reflect on the importance of play or playgrounds using the following prompts:

- I used to think ...
- Now I think ...

ACTIVITY: Impact

ATL

- Communication skills: Share ideas with multiple audiences using a variety of digital environments and media

Now it's time to think about the potential impact your playground could have on the community. You should reflect on both the importance of play and the distinct needs of your community. How will play benefit the community and how, in particular, will your playground do this? You may wish to use some of your answers from the previous discussion to **explain** the impact your playground could have on your community. Remember to consider this from multiple perspectives, as your playground will not just serve one type of person (for example, toddlers, children, parents, etc.).

At this stage you are not selling your idea to the user, though you are outlining the benefits to them. You are trying to promote your idea to the local city/town representatives. They might be thinking about short- and long-term costs, safety, press, public relations and benefits to the community. Is there anything that might appeal to them?

As you have used some storyboarding earlier in the chapter, you may choose to illustrate the impact with similar storyboards here too.

Assessment opportunities

- ◆ This activity can be assessed using Criterion D iv: Explain the impact of the solution.

Reflection

In this chapter you have found out about the importance of play, you have explored examples of playground design and you have taken action by designing your own playground.

Use this table to reflect on your own learning in this chapter.					
Questions we asked	Answers we found	Any further questions now?			
Factual: What do playgrounds look like across the world? What memories do you have of playgrounds? How does play benefit us?					
Conceptual: Why do we play? What role does play have in our community?					
Debatable: Should organizations, such as charities and local governments, be focusing on building playgrounds or is their time and money best spent doing something else?					
Approaches to Learning you used in this chapter:	Description – what new skills did you learn?	How well did you master the skills?			
		Novice	Learner	Practitioner	Expert
Communication skills					
Collaboration skills					
Organization skills					
Reflection skills					
Information literacy skills					
Critical-thinking skills					
Creative-thinking skills					
Learner profile attribute(s)	Reflect on the importance of risk-taking for your learning in this chapter.				
Risk-taking					

4

How can access to artificial light improve lives?

- Increased access to certain **resources** and **commodities** can have a huge impact on how communities **develop**.

CONSIDER THESE QUESTIONS:

Factual:

When do people need artificial light? How much natural light do different parts of the world get?

Conceptual:

How can access to artificial light change lives?

Debatable:

Should increasing access to artificial light be a global focus?

Now **share** and **compare** your thoughts and ideas with your partner or with the whole class.

KEY WORDS

infrastructure

artificial light

solar

energy poverty



■ **Figure 4.1** Why do people need artificial light?

○ IN THIS CHAPTER, WE WILL ...

- **find out** how having limited or no access to artificial light can have negative effects on people's lives
- **explore** different benefits of providing artificial light to people who previously didn't have it reliably
- **take action** by creating an affordable light.

■ These Approaches to Learning (ATL) skills will be useful ...

- Communication skills
- Collaboration skills
- Organization skills
- Reflection skills
- Information literacy skills
- Critical-thinking skills
- Creative-thinking skills

◆ Assessment opportunities in this chapter:

- ◆ **Criterion A:** Inquiring and analysing
- ◆ **Criterion B:** Developing ideas
- ◆ **Criterion C:** Creating the solution
- ◆ **Criterion D:** Evaluating

● We will reflect on this learner profile attribute:

● Inquirers

In this chapter you will have to inquire into lots of different situations and perspectives to really understand the problem you are trying to solve and your end user's needs.

If you are an MYP student, you probably have easy access to artificial light. You might not even realize how often you use and rely on light, or how different your life would be without it. You may be so used to having it that you think of it as a necessity, but there are many people in the world for whom it would be a luxury and don't have it.

The majority of these people are from rural parts of Africa and Asia, as well as in conflict zones. Lighting Global suggests that 250 million people across sub-Saharan Africa, as well as many people in other countries, including Afghanistan, Bangladesh, India, Myanmar, Pakistan and the East Asia Pacific have little or no access to electricity or artificial lighting. When they do have access it is often very limited and unreliable. These places are often described as energy poor.

Many of the places that have no or limited access to electricity lack the necessary infrastructure. This could be because they live somewhere very rural, so it would cost a lot of money for governments to put this in place. Or it may be somewhere where pre-existing infrastructure has been damaged, such as in a conflict zone.

In the first part of this chapter, you will learn about the impact this has on people's lives.

▼ Links to: Science

In Science class, you might have explored electricity or circuits. Use the knowledge you have gained in science to help you with your light design.

When do people need artificial light?

ACTIVITY: How much do you rely on artificial light?

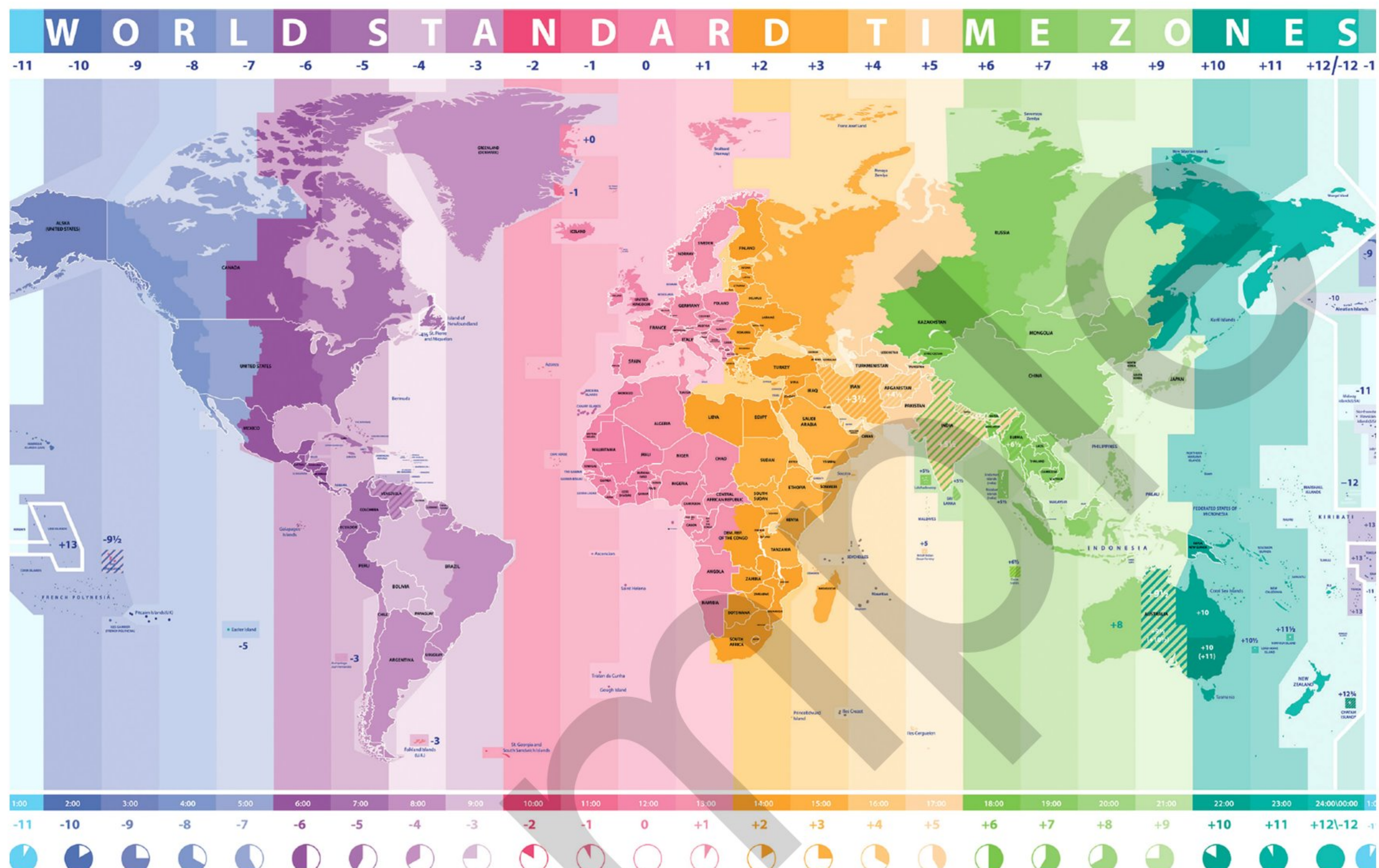


Figure 4.2 Different time zones across the world

Inquiry question 1

How much natural light do different parts of the world get?

List all the things you do on a normal weekday and sort into two categories – those that can be done with light and those that can be done without light. Add a time to each activity, for example, 'attending school: seven hours'.

Find out the sunlight hours for the shortest day based on where you live or where you are from. You can do this by searching for your country's name, plus 'winter solstice' or 'shortest day' in your web browser.

Now imagine you only had that many hours of daylight a day – which of the activities you previously listed would you **prioritize**? What would you be able to do without light? How much would lack of light **impact** your life?

You may then want to imagine you are in one of the following places during the time of year when they have the least access to sunlight and answer the same questions:

- South Africa: 10 hours 30 minutes
- Afghanistan: 9 hours 40 minutes
- Myanmar: 11 hours
- Mongolia: 8 hours and 10 minutes

Inquiry question 2

Based on this activity, answer the inquiry question 'Why do people need artificial light?'

You may wish to use the Sustainable Development Report map you looked at in Chapter 1 to learn about different countries' progress towards the goal of 'clean and sustainable energy' at:

<https://dashboards.sdindex.org/map>

ACTIVITY: Finding out more about the problem through videos

■ ATL

- Information literacy skills: Access information to be informed and inform others

It is recommended that you use a wide range of resources in your research. This includes primary and secondary sources, as well as different source types. These include articles, books, videos, interviews, newspapers, websites and more. However, this first activity will be done using only videos. As you are thinking about how limited access to electricity can impact people, it is interesting for you to start off by using a resource that you can only access because of your own access to electricity.

Often when people are watching videos for research, they come across two main problems. The first is trying to write notes throughout, which means that they just write down everything they hear and don't always process what is being said. This can lead to you missing the most important information and also having notes that are not relevant or helpful.

The second trap that people fall into is watching the whole video and then making notes. This may be better than the first example, as you are more likely to write down the main points or the quotes and phrases that stood out to you, but you may only remember information from the latter part of the video and may miss out key points (especially if the video is a little longer).

A solution for this is to watch videos in short sections of around 30 seconds. After the time has passed, write down the key pieces of information shared. Then repeat till the video is over. You might even put a small * to remind yourself to go back to certain parts of the video if you want an exact quote, fact or statistic. If you are watching the same video as your classmates, it can sometimes be useful to share notes, to see if you have missed anything that your classmates thought was important. You can even highlight the parts that you agree most with on your classmates' notes.

Another tip is to remember why you are watching a video and have clear research questions before you hit

play. Instead of just searching for videos around your topic, going a step beyond, by knowing exactly what you want to learn, can help you find specific information.

For this activity you will be wanting to learn:

- **Who** is access to light a problem for?
- **Why** is it a problem for them?
- **What** limitations does having limited or no access to artificial light cause them?
- **What** is currently being done about the problem?

Here are some suggested videos to watch, though you might also find your own:

- **Akon providing solar lighting in Africa for 600m people:** www.youtube.com/watch?v=CzFfQRBNTGA
- **Lighting a billion lives – bringing solar light to rural India:** www.youtube.com/watch?v=Ft99NJK-YSQ
- **Lighting Africa: Introduction to solar products:** <https://youtu.be/isuhjBIB9jY>
- **Solar power lights up rural Bolivia:** www.youtube.com/watch?v=kFVXokOii9Y
- **The Solar Power Makers – ZDF documentary about Africa GreenTec:** www.youtube.com/watch?v=4vBjvwvyBnI0
- **A village in Bihar lit up with solar power:** www.youtube.com/watch?v=4jPHyKLT0Gs

After watching and taking notes, write out why limited or no access to light is a problem and why we should try to solve this. Make sure to cite all the videos you used using your school's preferred citation method.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A i: Explain and justify the need.

EXTENSION

You may wish to do some further research by investigating the following links:

- **Energy poverty: let there be light:** www.youtube.com/watch?v=R6wyyYhPynA
- **The challenges of darkness:** <https://solar-aid.org/the-challenges-of-darkness>

How much natural light do different parts of the world get?

DISCUSS

Based on this activity, answer the inquiry question 'Why do people need artificial light?'

Has your understanding changed since you first answered this question after the first activity?

THINK–PAIR–SHARE

We have mainly talked about people who have limited or no access to artificial light. In some of these problematic areas people do have access to some light, usually kerosene lamps, battery-powered light sources or even light from fire. Why might these not be the best options for these communities?

You may wish to add this to your Criterion A i work.

DISCUSS



■ **Figure 4.3** Solar panels are used across the world, with the Samburu people in Kenya installing them on their houses

Using what you have learnt from your initial research (A i and A ii), what predictions can you make for how an introduction of solar energy may change this groups' lives? What can they now do that they couldn't do before? You may wish to do some additional reading into the Samburu people to learn more about their specific context.

DISCUSS: Global Goals

In Chapter 1 you looked at the UN's Sustainable Development Goals (or Global Goals). Think about the problems caused by lack of light and the hurdles, as well as the benefits that artificial light can bring. Which of the UN's Global Goals does this link to and why?

Discuss your answer with a partner.

You may wish to add this to your Criterion A i work.

ACTIVITY: Compass points

■ ATL

■ Critical-thinking skills: Gather and organize relevant information to formulate an argument

You are now at the stage where you need to do more research and dig a little deeper so you can find out more about the specific context of the problem you are going to solve. This might include narrowing down the location of where you would like your light to be used. Choosing a specific context, instead of a generalized one, will really help you to understand the exact problems of your target audience, so you can design the best possible solution for them.

For this section you will move away from a more traditional research table and will use the thinking routine ‘compass points’. This is a useful routine for fleshing out ideas but can also be used to help generate research questions and find answers. You probably have a rough idea of where you think you will design your lights for/your target audience – this activity will help you confirm that choice.

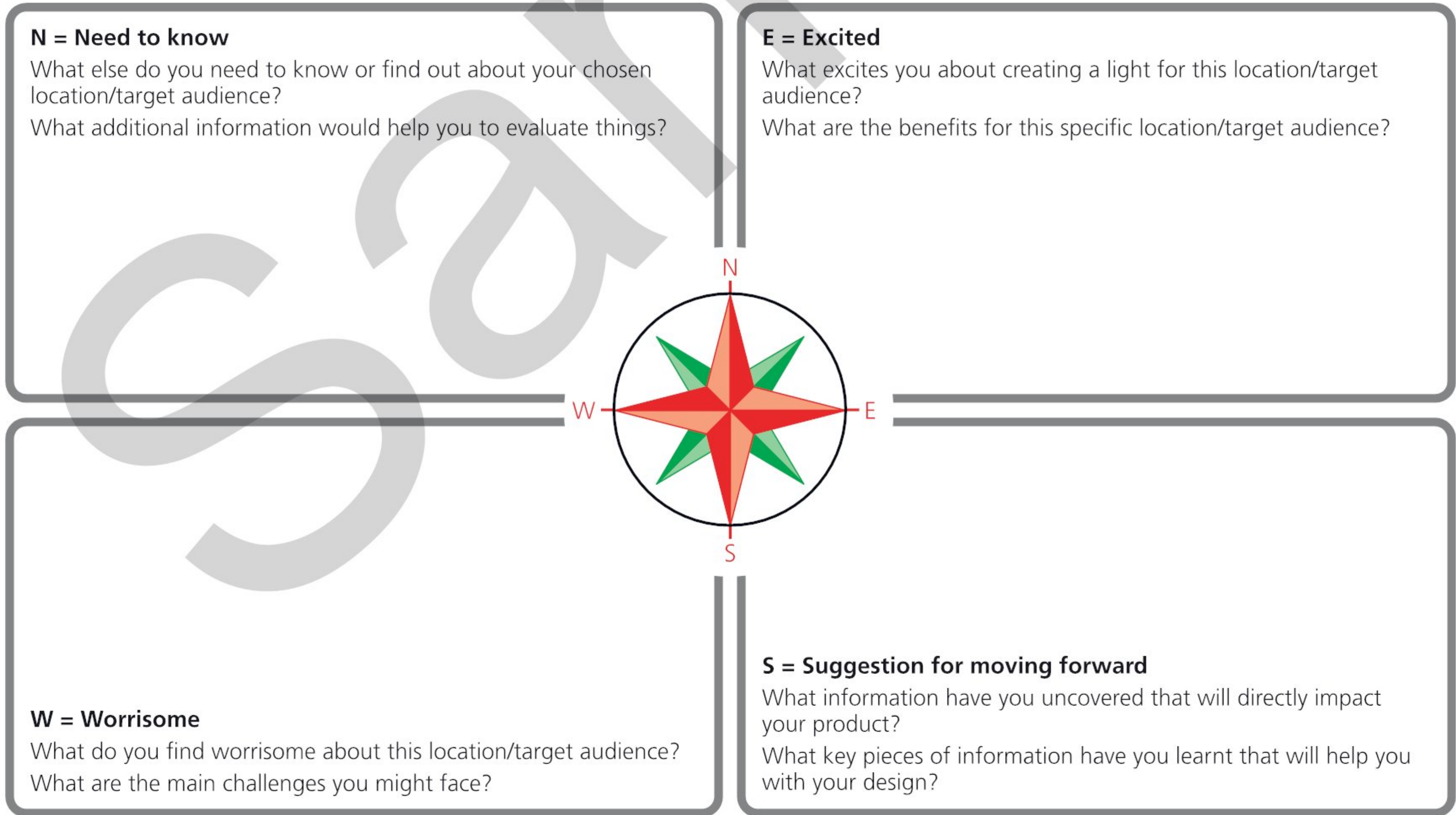
To complete this activity, you should add your research questions in the ‘North’ section of your compass. As you find your answers, add them to the other points of the compass. You may need to go back to the ‘North’ section to add new questions throughout this process.

- Questions to get you started:
- Why does this location have limited or no access to artificial light?
 - How much daylight does this location receive during the longest/shortest days?
 - What is the main industry of the area? Would reliable access to light help this?

You may wish to highlight or * the most important questions. You should also record where you found the answers to your questions on a separate document, using your school’s preferred citation method.

◆ Assessment opportunities

◆ This activity can be assessed using Criterion A ii: Identify and prioritize the research.



■ Figure 4.4 Compass points example

How can access to artificial light change lives?

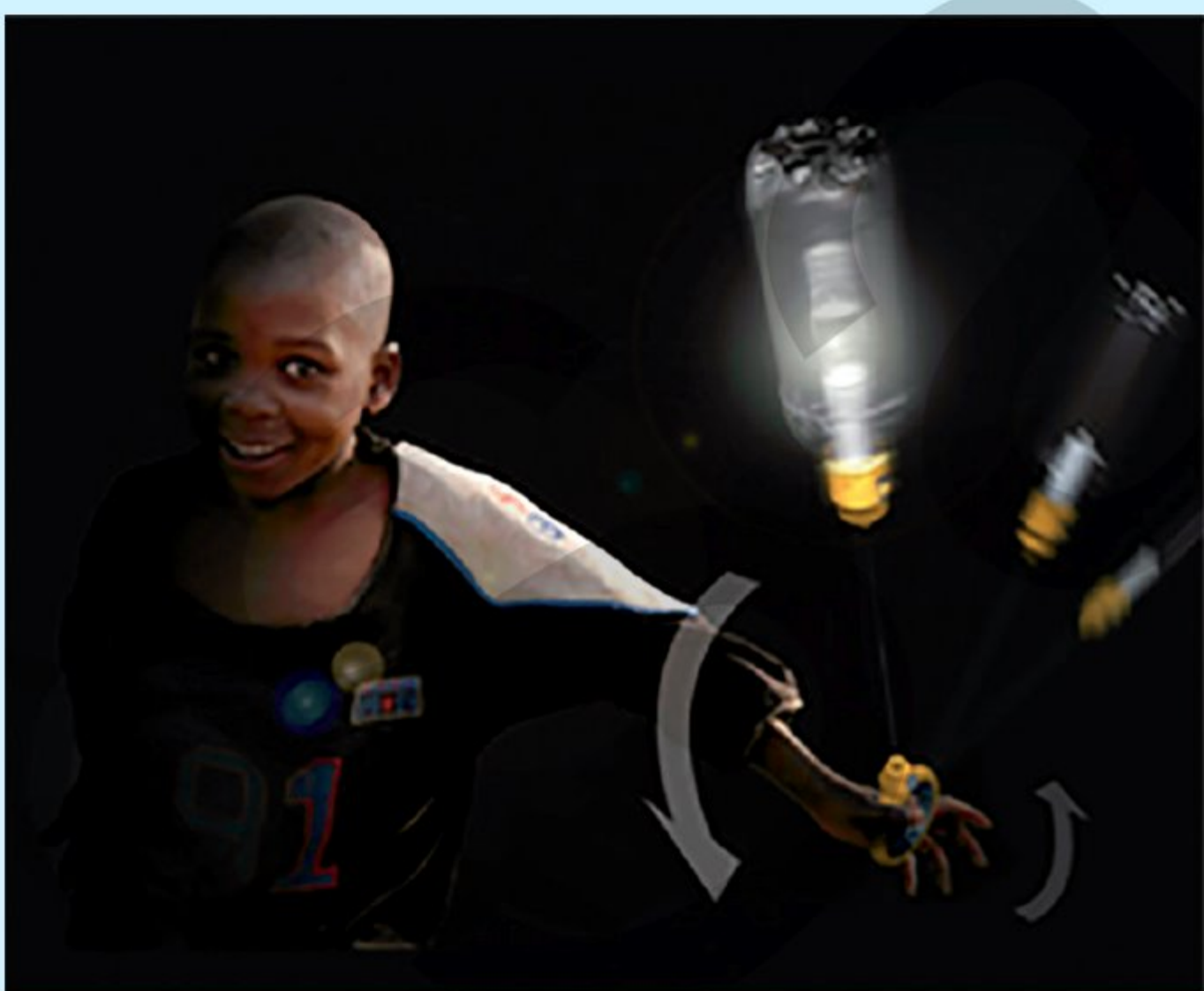
WHAT LIGHT WILL WORK BEST?

Earlier on you discussed some of the potential problems of kerosene or battery-powered light sources. Better alternatives might be those that are powered by renewable energy. These might be the most reliable, cost-effective and, of course, better for the planet. As you look at some existing solutions, think about how the lights are powered. This will help you decide the best way to power your own light.

MEET THE DESIGNER

Play & Lighting

www.yankodesign.com/2016/11/17/innovative-illumination



■ **Figure 4.5** Inventive ways to generate light

This light is charged by being wound or twisted – this means that the product works as both a light source and a toy.

Most of the solutions you will look at are powered by solar energy, though there are others powered by water, wind and even human movement. You may have learnt about different types of renewable energy in your science lessons. You may also wish to ask your science teacher for advice on the type of light you should make and can even ask them to help you **evaluate** your own light later on.

As you are mostly focusing on solar solutions, you may wish to watch this video:

How do solar panels work? (Richard Komp):

www.youtube.com/watch?v=xKxrkht7CpY&t=1s

MEET THE DESIGNER

Liter of Light

<https://literoflight.org>



■ **Figure 4.6** Designs can be adapted and expanded to meet needs

Liter of Light started off by making a light inside a recycled plastic bottle to illuminate people's homes. They now have portable lights and streetlights.

MEET THE DESIGNER

Solar Buddy

<https://solarbuddy.org>



■ **Figure 4.7** Lights make a huge difference to a child's life

Solar Buddy is the name of both a product and charity, which aims to gift 6 million lights to children living in energy poverty by 2030.

MEET THE DESIGNER

Little Sun

<https://littlesun.com>

Little Sun has a range of solar lamps and has already successfully provided over a million of them to people living in energy poverty. They have an online shop where, when you purchase yourself a light, you are also donating one.

Having light is an important part in supporting a child's education and therefore their future opportunities.

ACTIVITY: Improving existing solutions

■ ATL

- Creative-thinking skills: Design improvements to existing machines, media and technologies

There are many organizations and charities already working on bringing light to different parts of the world. When **analysing** existing products for this chapter, think about ways you could improve them. Do you think you could make them last longer, be more affordable, easier to use, more **aesthetically** pleasing, more environmentally friendly? Instead of **analysing** these by writing a 'pros' and 'cons' list, write a 'pros' and 'even better if ...' list. This means you will be highlighting all the benefits the current solutions provide but also thinking about improvements you could make. These could be general improvements to the product or they could be how you would adapt them so that they would work for your specific location/target audience.

EXTENSION

You may also wish to look at the following websites to find out about other ways people and organizations are bringing light into people's lives:

- <https://bookaid.org/blog/2020/04/01/girls-succeeding-through-books-and-lamps-in-kakuma>
- www.lettherebelightinternational.org
- www.lightingafrica.org
- www.lightingglobal.org
- <https://luminaid.com>
- <https://solar-aid.org>
- <https://sunnymoney.org>

Don't forget to look at the websites to find out additional information, including where they are used, the cost, the impact so far and more.

Have a look at some of the existing products included on pages 82–3, or find your own.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A iii: Analyse existing products.

ACTIVITY: Trusting product websites

■ ATL

■ Information literacy skills: Collect, record and verify data

In the last activity you **analysed** a range of existing products by not only looking at the products, but by finding more information on their websites. On the websites you may have seen facts about the problems they are trying to solve, for example how many people do not have access to reliable electricity in different parts of the world, and information about the impact their products have had, for example how many people have been given access to their product.

How do you know the information on the website is reliable? There are a few different things to think about to help you to do this.

- When was the website last updated?
- Where are they getting their information from?
- Does the website link to other reliable sources?
- Might the company benefit from exaggerating their impact?
- Are numbers on the website rounded?
- Is the website a charity or non-profit, or are they making a profit on their product?
- Does the website have a media section or links to other websites talking about the product or company?
- Can information on the website (probably at the bottom of the home page or on an 'about' page) help you better understand the company?

Another method for checking the reliability of the information provided is looking at other sources to see if they provide the same or similar information. Students often use Wikipedia as a source, but this can be unreliable as anyone can post there. However, if you look at the sources at the bottom of the page and check facts against other sources, you should be able to use this confidently. This is the same for product information. While there are no hard rules and sources are usually not 100 per cent reliable or 100 per cent unreliable, you must try to verify the information you are going to use. If you are using a website that you think is reliable, but notice there are possibilities of bias, out-of-date information or other problems, make sure to discuss this in your work.

IB learner profile: Inquirer

What other questions might you ask to check the reliability of a source you are using? Are there any particular questions that are useful when **analysing** existing products?

ACTIVITY: Design brief for your light

■ ATL

- Communication skills: Paraphrase accurately and concisely

In your design **brief** you will **summarize** the research you have done so far and will **describe** what you will make to solve the problem. There should be a clear connection between your research and your product idea – how has your research impacted your solution? You should also contextualize your problem by telling us more about the location/target audience you will be designing for. You may also wish to add information about any problems or limitations you may face, for example working with a small budget.

In the design brief, think about our inquiry question: 'How might access to artificial light change lives?' Tell us the problems your target audience are having and how your light will change their lives.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A iv: Develop a design brief.



ACTIVITY: Let's get specific

■ ATL

- Critical-thinking skills: Identify obstacles and challenges



■ **Figure 4.8** Different types of lighting

Before you dive into writing your **specifications** for your finished light, you should think about what the most important elements of your light are. Take a look at the list below, and decide which should be your priorities:

- The light will be affordable.
- The light will be long lasting (the physical product will be **robust**).
- The light will be long lasting (the product will give a lot of light hours).
- The light will be aesthetically pleasing.
- The light will be easy to repair.
- The light will be made of only a few materials.

- The light will be made with lots of materials, including easily replaceable parts.
- The light will be very bright.
- The light will illuminate a small space.
- The light will illuminate a big space.
- The light will be made of only a few materials.
- The light will be waterproof.
- The light will be lightweight.
- The light will be sturdy/heavy.
- The light will be made of recycled materials.
- The light will be made of recyclable materials.
- The light will be fully constructed before it is delivered to the target audience.
- The light will be in parts and easy for the target audience to assemble.

You might decide that some of the items on the list can't work together – for example, if the product is affordable, maybe it is less likely to last a long time. Make sure you write down any obstacles and challenges you think you might face, so you can look for solutions.

When you have decided your priorities, you may find that you need to do some more research, for example learning about the different materials you can use. You might also need to do research to find out the potential of the materials you want to use, for example calculating the cost of a solar panel, as well as how long it will charge a certain bulb for. You might even explore unusual materials, such as mycelium, paper mâché or bioplastics.

When you have decided your priorities and done any additional research, write down your specifications. Remember to keep the context (location and target audience) in mind while doing so. You might also need to consider your own technical skills – are there certain skills, like soldering, that you already have or can develop? If not, make sure your light can be made without this skill.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B ii: Develop a design specification.

ACTIVITY: Find out more

■ ATL

- Information literacy skills: Collect and analyse data to identify solutions and make informed decisions

Mycelium lights



■ **Figure 4.9** Natural materials are increasingly appealing to designers

Many designers are using mycelium – the part of a fungus that mushrooms grow from – to make products ranging from lights to houses. You can buy kits to grow your own mycelium to shape into products. It is a natural material that designers are increasingly turning to as an alternative to plastic.

Find out more by searching **bioengineering**, **biomaterial**, **biotechnology** or **mycelium** or by having your school host a 'BioJam' (<https://biojamcamp.weebly.com>).

Bioplastic lights



■ **Figure 4.10** Bioplastics provide good alternatives

Bioplastics are plastics made from natural products instead of petroleum. They are often made from vegetables or fruits, particularly starchy ones such as bananas. They are much less damaging to the environment and are usually biodegradable.

If you want to use mycelium or bioplastics, you might want to work closely with a science teacher.

ACTIVITY: Initial ideas

■ ATL

- Creative-thinking skills: Use brainstorming and visual diagrams to generate new ideas and inquiries



■ **Figure 4.11** You should aim to present at least three coherent ideas. While you want them all to meet as many of your specifications as possible, you also want them to be distinct from each other. Maybe one of them uses a different type of material or another is a completely different shape

Your finished product will probably have a finished look that hides some of the things happening below the surface. For example, you might make a box light, where you can only see the light bulb, a solar panel and the covering, and then underneath might be the wires and other parts you want to keep hidden and protected. When you are developing your initial ideas,

you only need to show how the finished product will look, as the purpose of this stage is to show someone, ideally your target audience or an expert, your ideas, so you can gather **feedback**.

Make sure that when you are doing these initial ideas you keep in mind that you will need enough space for things like wires to fit. You may also wish to draw the idea from additional angles. Make sure you annotate them so they are clear to understand. Try to make each idea meet as many of your specifications as possible, but do not be afraid to try out new ideas that are slightly different, as long as you can **justify** any changes made and the product will still solve your target audience's problem.

You should aim to have at least three different sketched out ideas. Although the examples given here are done on paper, you may wish to **create** these sketches digitally. To assess which idea is best, look back at your list of priorities and specifications and see which design fulfils the most. You are unlikely to be able to gather feedback from your actual target audience, but you could ask an expert, including your design teacher. You could even share your ideas, through email, with some of the different charities you have explored earlier, to see what they say. Make sure you can clearly **justify** which of your ideas you should **develop** further, with evidence/clear reasons, not just because you like one of the ideas best.



■ **Figure 4.12** You might want to illustrate your plan so that someone else can follow it easily, regardless of their reading ability or the language they speak. IKEA and LEGO instructions are both excellent examples of this

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B i: Develop design ideas and B iii: Present and justify the chosen design.

EXTENSION

Alternative links for mycelium and bioplastic products:

- <https://danielletrofe.com>
- www.ft.com/content/876f01b6-f65b-11e9-bbe1-4db3476c5ff0
- www.nirmeiri.com/mycelium-lights
- www.wired.com/2014/12/diy-kit-lets-make-designs-mushrooms

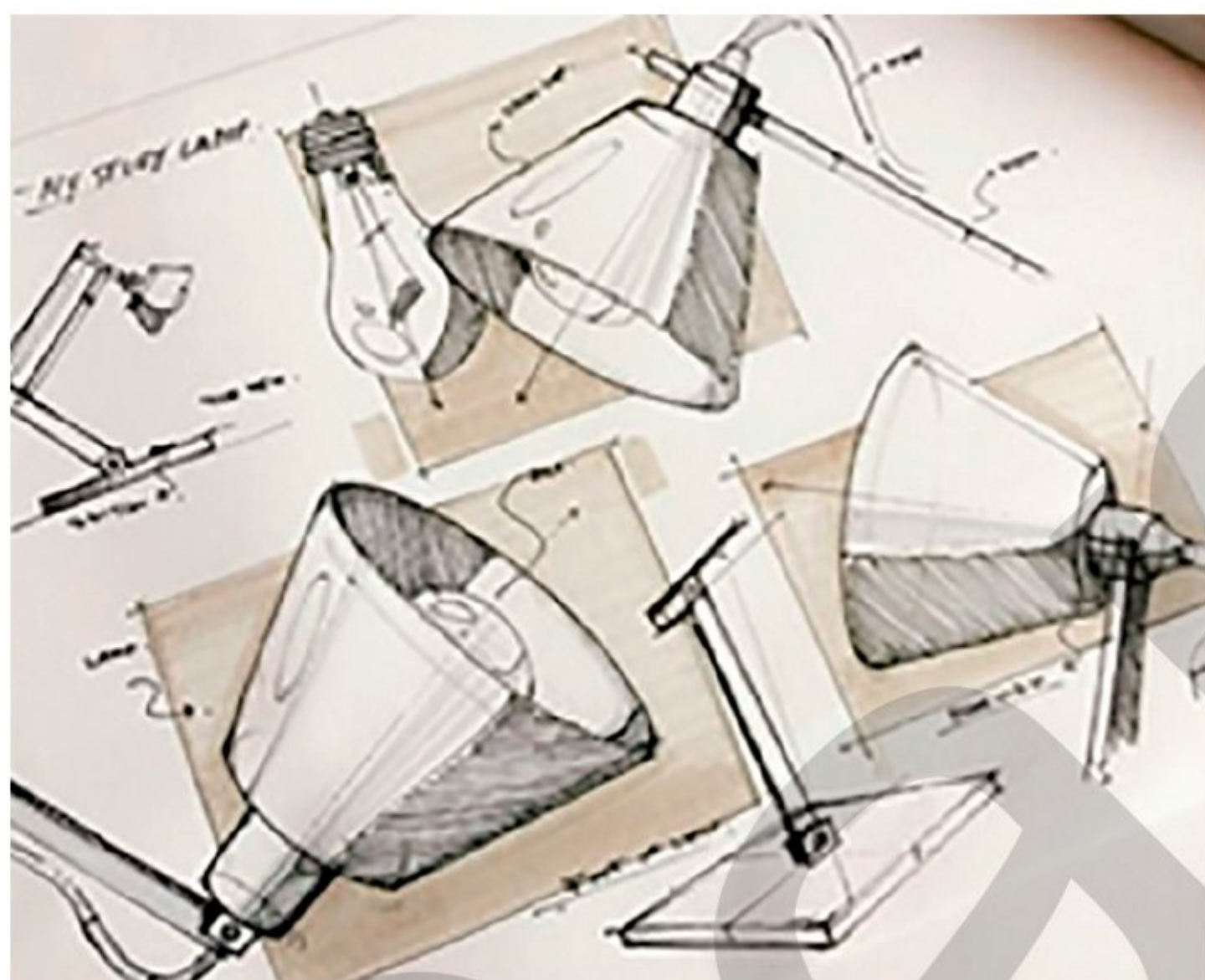
Should increasing access to artificial light be a global focus?

ACTIVITY: Let's get detailed



■ ATL

- Organization skills: Use appropriate strategies for organizing complex information



■ **Figure 4.13** A more detailed sketch of an idea for a lamp, with the same lamp shown from a few different angles

Now that you have decided which idea you will **develop** further, you need to sketch out the product from all angles and should show what is going on 'behind the scenes' (for example, any wiring). You may wish to get support from your design or science teacher to help you with this aspect.

These sketches should be more detailed than the last. They should be drawn accurately, to scale, with every part included. The parts should be clearly labelled

and colour should be added (this will be helpful with your wiring).

Although we often draw our developed ideas, then write a logical plan separately, for this project it would be worth doing these together. This means that when you make your logical plan, you can refer to parts of your sketch. This is why it is important that every part is labelled. You might even wish to number the different parts, to make writing your plan easier.

When writing your plan, make sure you consider time and any tools you will need to use. If you are using an unusual product such as mycelium or are creating your own bioplastic, make sure you factor in the time these materials need to develop, for example, mycelium needs a number of days to develop/grow.

If you are making a product that you want to be easy to repair or for the target audience to put together themselves, you need to make sure the instructions are really easy to follow. You may even wish to make an illustrated logical plan, so that it is easy for anyone to understand, regardless of their reading ability or the language they speak.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B iv: Develop planning sketches and C i: Construct a logical plan.



ACTIVITY: Document yourself making your light

■ ATL

- Creative-thinking skills: Create original works and ideas; use existing works and ideas in new ways

Now it's time to document yourself making your light. You should take photographs or videos throughout, especially when you are using specific technical skills, like soldering or 3-D printing, or trying out something completely new, such as growing mycelium or creating a bioplastic.

Make sure you follow your plan exactly, using all the same materials, tools and timings. As you go, make sure you write down any changes you had to make. Changes should only be made for a valid reason, not just because of convenience or distraction. For example, if you are making a product using cardboard and you realize the cardboard you had was not strong enough and you needed to source another cardboard, this is fine.

If you are intending to send your plan along with your light so that someone else can construct it or so that it is easy to repair, make sure you add any changes you had to make. You could also use the photographs/video of you making your light in the plan you send to your target audience.

When the product is complete, take good-quality photographs of it. You should think about lighting your product clearly, maybe using a light box. You should also show your light from different angles, possibly mirroring the angles you drew in your detailed sketch.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion C ii: Demonstrate technical skills, C iii: Follow the plan to create a solution and C iv: Justify changes made to the plan.



■ **Figure 4.14** This designer uses a light box to make sure her product is evenly lit in her photographs

ACTIVITY: How good is my light anyway?

■ ATL

- Information literacy skills: Collect, record and verify data

Unlike many other design projects, you may not be able to evaluate the success or impact of your product by gathering feedback from the target audience. You most likely will not be able to test out the product in the location it is intended for. However, you can design other types of **testing** methods to **evaluate** your product. Remember, you should be able to generate data for each of your specifications.

Some possible ideas:

- Simulate the location your product is intended to be used in. If the product is solar powered, you could work out the amount of sunlight hours in a day in your location, charge your light, then see how long it lasts.

- Test your product in the dark. How long does the light last? How much does it illuminate? What tasks can/can't you do with that amount of light?
- Is your product meant to be constructed or repaired by someone else? Have a family member or classmates construct or repair the product. How easy/difficult was it? Did they need further guidance?

Remember to look back at your design brief. Is the product you have created ideal for the needs of the location/target audience? To what extent does it solve the problem(s) you identified?

Make sure to design testing methods that allow you to gather data to show off the success of the product, as well as to find any weaknesses, so that you may improve it.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion D i: Design testing methods, D ii: Evaluate the success of the solution and D iii: Explain how to improve the solution.

ACTIVITY: The potential impact of my product

■ ATL

- Creative-thinking skills: Make guesses, ask 'what if' questions and generate testable hypotheses

Now it's time to really think about the impact your product could make. You could consider either the impact your individual product would make, or you could predict the potential impact of your product, for example, if you were able to donate 10000 of your lights.

Some useful things to think about when you are calculating the impact:

- What problems did you **identify** and are these solved?
- What activities can the user now do with the additional hours of light?
- Will the product have a knock-on impact? For example, if you are giving someone additional hours to study in the evening, this will have an impact on their grades at school. This will have further impacts, such as access to further education, better careers and so on.
- Will the product have an impact on anyone outside the direct user?

You may wish to look back at how the product websites you explored earlier described their impact. Can you do a similar calculation or use similar language when explaining the impact your product has had? You might also want to check out the Solar Buddy impact calculator (<https://solarbuddy.org/about/impact-calculator>). This could be good inspiration for calculating the impact of your own product.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion D iv: Explain the impact of the solution.

EXTENSION

Explore further by finding out other ways energy poverty can negatively impact people. You might want to think about lack of electricity in public spaces, such as schools or hospitals. You might also wish to think about things other than light that rely on power that might benefit people (everything from the internet to fridges).

! Take action

- ! Now that you have designed your light, see how you can actually get it to the intended user. There are many organizations that accept light donations, but you could also look to make a direct connection yourself (for example, sending the light, along with a description of the product, to a school in the location you selected).
- ! Beyond this product you might want to take action by raising awareness of energy poverty, running a campaign in your school and fundraising to donate lights. Many of the product and charity websites you looked at earlier have educational information, which you could share with your peers in class, through a club or through an assembly.
- ! For more ideas on taking action, check out <https://solar-aid.org/take-action>.

Reflection

In this chapter you found out how having limited or no access to artificial light can have negative effects on people’s lives. You explored different benefits of providing artificial light to people who previously didn’t have a reliable source. You then took action by creating an affordable light.

Use this table to reflect on your own learning in this chapter.					
Questions we asked	Answers we found	Any further questions now?			
Factual: When do people need artificial light? How much natural light do different parts of the world get?					
Conceptual: How can access to artificial light change lives?					
Debatable: Should increasing access to artificial light be a global focus?					
Approaches to Learning you used in this chapter:	Description – what new skills did you learn?	How well did you master the skills?			
		Novice	Learner	Practitioner	Expert
Communication skills					
Collaboration skills					
Organization skills					
Reflection skills					
Information literacy skills					
Critical-thinking skills					
Creative-thinking skills					
Learner profile attribute(s)	Reflect on the importance of being an inquirer for your learning in this chapter.				
Inquirer					

5

How can we use our design skills to promote service activities in our schools?

- Innovative methods of communication can raise awareness of initiatives happening within our institutions.

CONSIDER THESE QUESTIONS:

Factual:

What service projects are happening in our community? How many people know about these projects? How do they find out about the projects? How can we make sure this information is communicated clearly to the various members of our community (different languages, parents, teachers, etc)?

Conceptual:

How might the existing service projects be better promoted? How can we raise awareness of service projects happening in our school?

Debatable:

Should we have to come up with innovative methods of communication to increase community engagement in service projects?

Now **share** and **compare** your thoughts and ideas with your partner or with the whole class.



Figure 5.1 How can we raise awareness of service projects happening in our school?

IN THIS CHAPTER, WE WILL ...

- **find out** about service initiatives happening in our schools
- **explore** ways of promoting these initiatives
- **take action** by raising awareness and increasing participation in these initiatives.

KEY WORDS

action

service

copy



■ These Approaches to Learning (ATL) skills will be useful ...

- Communication skills
- Collaboration skills
- Organization skills
- Reflection skills
- Information literacy skills
- Critical-thinking skills
- Creative-thinking skills

◆ Assessment opportunities in this chapter:

- ◆ **Criterion A:** Inquiring and analysing
- ◆ **Criterion B:** Developing ideas
- ◆ **Criterion C:** Creating the solution
- ◆ **Criterion D:** Evaluating

● We will reflect on this learner profile attribute:

● Communicator

We will use communication skills to promote service opportunities, as well as IB Service as Action requirements.

THINK–PAIR–SHARE

What are the existing service projects happening in your school?

See how many you can **list** and share what you know about them.

Service and action are integral parts of the MYP (as well as the other IB programmes) and all chapters in this book are linked to taking action. However, this chapter will focus on the Service as Action projects and initiatives happening in your school. These might be initiatives coming directly from your classroom curriculum, activities run in your advisory classes, one-off events, school clubs or other projects. These might be run by a teacher, student or group of students.

What service projects are happening in our community?

WATCH

'MYP: Service as action overview for students' by Diane Smith: <https://youtu.be/w1uK2a5-kVA>

The IB provides the definitions below:

Action is learning by doing and experiencing, and is a key component in constructivist models of education, including the kind of teaching and learning common to all IB programmes. Through responsible action, tightly connected with sustained inquiry and critical reflection, young people and adults can develop the kinds of attributes described by the learner profile that are essential for success in future academic pursuits and life beyond the classroom.

Service, as a subset or particular kind of action, has always been a shared value of the IB community. IB learners strive to be caring members of the community who demonstrate a personal commitment to service, and act to make a positive difference to the lives of others and to the environment.

You will use your skills as a designer to support Service as Action in your school. This could be through raising awareness of an upcoming event, activity or an existing club. You will work closely with those involved in running or organizing an initiative, and maybe with your school's Service as Action coordinator. You will treat this person as your **client**.

As you are creating a promotional product for an initiative in your school, you may also wish to think about the school's logo, colours or other branding.

In your school there are probably many things happening linked to Service as Action – how can you, as a designer, promote these initiatives?



■ Figure 5.2 Service as Action initiatives

DISCUSS

The Service as Action learning outcomes are closely linked to the IB learner profile attributes as well as the Approaches to Learning (AtL) skills. Look at each learning outcome with a partner or in a small group and **describe** the connections you can see to the learner profile attributes and AtL skills.

You may also wish to discuss which are the easiest and most challenging learning outcomes to reflect on.

To find out about existing Service as Action initiatives happening in your school, you may want to reach out to your Service as Action coordinator (or MYP coordinator). They should be able to give you a list of existing projects, as well as school expectations and requirements. Your school may even have a Service as Action website or handbook that you can refer to.

As an MYP 4–5 learner, you should already be familiar with Service as Action projects, your school requirements and have had lots of practice reflecting on your involvement. As a reminder, here are the learning outcomes that students are expected to use to help them reflect when completing a Service as Action project:

- Become more aware of their own strengths and areas for growth.
- Undertake challenges that develop new skills.
- Discuss, **evaluate** and plan student-initiated activities.
- Persevere in action.
- Work collaboratively with others.
- Develop international-mindedness through global engagement, multilingualism and intercultural understanding.
- Consider the ethical implications of their actions.

SA Initiative	Problem	Possible solution
GSA (Gay Straight Alliance)	Students are unaware of when the club meets, what they do and who can get involved	A website for the school's GSA club. This will have information about the club, but also general support resources for students
Monthly Beach Clean-Up	Only a small number of students turn up to this	Posters to show when the beach clean-up happens, showing how easy and fun it can be
Refugee Lunches	Once a month, on a Sunday, the school invites local refugee families in the school for lunch and family activities – the club needs to raise money to help this continue to happen	A product to be placed in the foyer, with clear information about the lunches and a place where people can donate coins
School Spirit Club	The spirit club wants to get more members of the community involved in sharing what they value/love about the school	An interactive display where students, teachers and parents can write their responses to a new question posted each week
Anti-Bullying Club	The club wants people to be able to share their stories and ask for help anonymously	An app, where people can ask for support and share their stories, with links to outside resources

■ **Table 5.1** Suggestions to resolve problems for existing Service as Actions initiatives

ACTIVITY: Who What How When Why?

■ ATL

■ Collaboration skills: Help others to succeed



■ **Figure 5.3** Anti-bullying club

Make a table or **list** that shows the Service as Action initiatives you are aware of and are interested in

supporting. Think about the potential problems these initiatives might be facing, which are stopping them from meeting their full potential. Then think about the possible ways you can support them as a designer. Your solutions might be an app, website, poster, social media campaign or something else entirely.

Once you have made the list, think about which are most important to you. Communicate with the people who run the initiative and ask them if they would like to work with you. Once you have decided which project you will work on, clearly **describe** the project, its aims, the problems it faces and roughly what you intend to do to solve them.

Make sure you are describing exactly how your design skills will help the initiative. For example, through raising money or through increasing participation. At this stage, you will just mention the type of solution, for example, 'a social media campaign'. After doing more research, including looking at existing solutions, you will **describe** in more detail, in the design brief, what your solution will be.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A i: Explain and justify the need.

Design situation

For this chapter you will have to assess what service is happening in your school. **Identify** a problem related to an individual initiative or service as a whole then come up with a relevant solution. You should work closely with those involved with the initiative (for example, a club leader, Service as Action coordinator, teacher or student group).

ACTIVITY: Head, heart, hands

■ ATL

- Critical-thinking skills: Gather and organize relevant information to formulate an argument

If you find describing a problem, why it needs to be solved and how you will solve it, you might want to use 'Head, Heart and Hands' to guide you. You can even use icons for a head, heart and hands to help you share your thoughts with others.



- **Figure 5.4** A helpful way to breakdown a problem and possible solutions to aid discussions

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A i: Explain and justify the need.

ACTIVITY: Who knows what?

■ ATL

- Collaboration skills: Listen actively to other perspectives and ideas

You have already spoken to those involved in running the service activity/event/club. Now you will research into the perspectives of others, so you can better understand how to promote the initiative. You might wish to speak to parents, students, teachers, other members of staff, students involved in the service activity or students not involved in the activity. As you have already identified a problem, you may wish to use your research to better understand the problem. An example of a problem is that not enough people know about a service club.

Taking a row from the previous table, change the last column, as shown below:

SA Initiative	Problem	What do I need to know? Who should I ask?
GSA (Gay Straight Alliance)	Students are unaware of when the club meets, what they do and who can get involved	Questions for students: <ul style="list-style-type: none">• Have you heard of GSA?• Do you know what GSA does?• Who can join GSA?• When and where do they meet?• Which students are part of GSA?• What do they do in GSA? Digital survey. Can also gather emails through the survey, then send out a link to the website, when it is finished, to students who may be interested

■ **Table 5.2** Researching to resolve problems for existing Service as Actions initiatives

Make sure you approach this research in an organized way. You should think about what you want to know, then come up with a **list** of research questions. You should then think about how you will ask these questions. For example:

- individual interviews
- group interviews
- digital survey
- paper survey (distributed in the canteen, for example).

Remember that you will be using the information you gather to inform your design. The answers to your research will help you better solve the problem you have already identified.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A ii: Identify and prioritize the research.

EXTENSION: What's happening already?

■ ATL

- Critical-thinking skills: Practise observing carefully in order to recognize problems

How is the initiative you are focusing on currently communicating to the community? Do they have posters? Maybe they share information in a newsletter or morning bulletin. Maybe they have an app, website or social media presence.

Analyse their current communication. What is and isn't working?

Are there any other initiatives that are working well (for example, are well-attended)? How are they communicating to the community? What is it that they are doing that makes them so successful?

If you cannot find much to **analyse**, you might want to look online to see how other schools are promoting the Service as Action initiatives in their schools. Many schools share their Service as Action handbooks online and many schools' websites and social media sites show off all the service activities their students are doing. Can you find any particularly inspirational examples?



- **Figure 5.5** How many people do you think pass the posters in this hallway? How many people do you think actually stop and read them?

When **analysing** these existing methods of communication, you may want to think about:

- Who is the communication aimed at?
- How is it customized to that audience?
- Where is the communication and who will actually see it?
- What information is shared through the communication?
- What exactly would you like to know about the initiative (what, who, when, why, how) and are these all covered in the communication?
- How would you describe the **aesthetics** of the communication?
- Does the communication connect specifically to the school? (Does it use school colours, the school's logo or other branding elements?)
- What do you like about the communication product? How could it be improved?



- **Figure 5.6** What information is missing from this poster? What do you like about the design? What do you dislike about it?

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A iii: Analyse existing products.

How might the existing service projects be better promoted?

TIME–TALENT–TREASURE

Service projects can usually be divided into three categories: time, talent and treasure.

Time usually means volunteering your time. **Talent** means using your skills to make something. **Treasure** would be donating or raising money for a cause.

Do you think one of the three categories is more helpful, valuable or worthy than the others? Discuss with a partner and give reasons for your answer.

Lastly, think about the initiative you are working on – does it focus on one, two or all of the categories? How?

EXTENSION

The IB also breaks service down into direct service, indirect service, advocacy and research. Their document *Service as Action in the MYP in different modes of teaching and learning* gives many examples of initiatives that fall into these categories. Ask your Service as Action coordinator if you would like to see this document.

ACTIVITY: Design brief

■ ATL

- Communication skills: Paraphrase accurately and concisely

Write your design **brief** for your client, who is the leader of the service activity you are focusing on promoting. In the design brief you want to show that you understand the aims of the initiative and have found a way of better promoting it to the community.

Based on your initial research and/or your analysis of their existing communication, you should mention the problem you identified that they are having. Make sure you do so in a sensitive way that does not insult or upset anyone. If you think their current promotional materials, such as their posters, are not informative or not aesthetically appealing, you could say: 'The current posters are missing a few pieces of key information and could be brighter so they stand out more in the hallways.' Avoid using unconstructive language such as: 'The posters are rubbish!'

You then want to **describe** your plan. **Explain** exactly how it will help them. It could be, for example, to increase attendance, help them raise money or spread awareness of a cause. You should also **describe** what makes your idea innovative. You should think about the best communication method for your target audience too – do they prefer digital or physical? What languages do they speak? Where do they look for information? What do they already know? What styles do they like?

Your design brief should **summarize** the information you have gathered. Bear in mind that you are packaging it for a specific audience, your client. Make sure you are paraphrasing the information accurately and concisely, but for your new audience. Think about your design brief as a way to promote and pitch your idea!

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A iv: Develop a design brief.



ACTIVITY: Design specifications

■ ATL

■ Communication skills: Write for different purposes

When writing your design **specifications**, think of them as a guide to help you **create** your product. You can also think of them as a contract, agreement or a promise to your client. For these design specifications, write them for the leader of the initiative you are focusing on. This should be the same person you wrote your design brief for.

Keep in mind our statement of inquiry: ‘Innovative methods of communication can raise awareness of initiatives happening within our institutions.’ Make sure to focus on how your solution is innovative and

how your product will communicate about the initiative. Also think about who it will communicate to and what exactly it will communicate.

For the **testing** method, you may be getting **feedback** from different people, such as the initiative organizer and the audience of your product. However, it might be directly linked to the problem you are solving. For example, if you are trying to raise the membership of a school club, you could see how many new members the club gets.

◆ Assessment opportunities

◆ This activity can be assessed using Criterion B ii: Develop a design specification and D i: Develop testing methods.

You may want to use the following table to help you.

Number	Category	Priority	Success criteria	Testing method
1	Aesthetics			
2	Copy (text)			
3	Location			
4	Audience			
5	Size			
6	Function			
7	Time			

■ **Table 5.3** Tracking your progress

Use the following information to help you complete your table.

Category	What does it mean?
Aesthetics	What will the style of your solution be? You might also include information about colours, photos, icons, fonts or logos.
Copy (text)	What exactly will your solution include? For example, a date or location of an event.
Location	Where will your solution be displayed? For example, is it for a campaign on a particular social media platform, or is it a poster that will be displayed prominently in your school?
Audience	Who is your product aimed at and how are you designing it for them?
Size	What is the size of your product? This could literally be the size of a poster you are making, or it might be linked to time (for a video) or pages (for a website) or posts (for a social media campaign).
Function	What is the exact purpose of your solution? This should be linked to the problem you are solving.
Time	When will your product be ready?

■ **Table 5.4** Understanding what the categories mean

How can we make sure this information is communicated clearly?

ACTIVITY: Initial ideas

■ ATL

■ Communication skills: Organize and depict information logically

You've already described what you are planning to **create** in your design brief and specifications. It's now time to start creating basic visuals for your ideas. At this stage you want to think about the layout, colours and maybe what type of images or fonts you will include. You do not need to have the exact copy or images but you should have enough information so that your client can visualize your ideas and give you feedback.

If you are making a product with multiple connecting pages, like an app or website, you may wish to make a wireframe, which shows the layout of the pages as well as how they connect. This will help your client to understand how the user will experience the product.

Try to make at least three to five ideas to share with your client. Each of these ideas should be very flexible, as your client might like different elements from different ideas. For example, they might love the layout of your first idea, the colours from your second idea and the font from your third idea. You will be able to use your client's feedback to **create** the perfect solution for them.

You may wish to make these initial ideas digitally or by hand – when choosing, make sure your idea is clear and easy for your client to understand.

If you are looking to make digital wireframes, there are many websites that provide templates and can help you make them easily. Lucidchart is a popular choice: www.lucidchart.com/pages/templates/ui-mockup

◆ Assessment opportunities

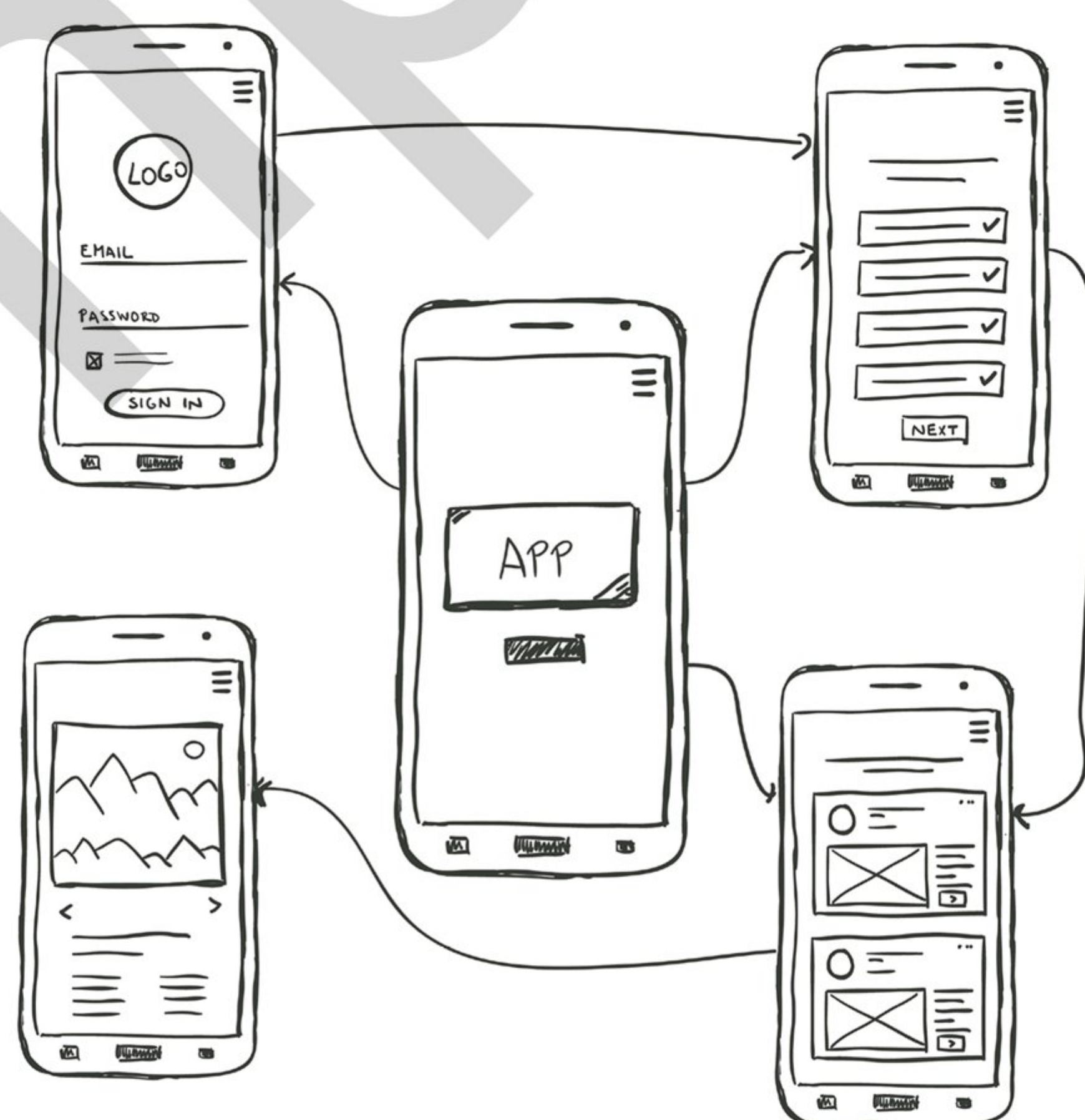
◆ This activity can be assessed using Criterion B i: Develop design ideas.



■ **Figure 5.7** Rough ideas for a poster design, showing colour, icons, layout and fonts



■ **Figure 5.8** This shows a website layout and font, as well as the type of content, including images and text, that will appear in different places



■ **Figure 5.9** A hand-drawn app layout, showing layout and content, as well as how different pages link together

USER INTERFACE (UI) AND USER EXPERIENCE (UX)

User interface (UI) describes the different pages, buttons, links, icons and other interactive elements of a website, app or other digital product. UI describes the layout of a product, as well as how a user interacts with it. For example, what happens when they click, swipe or hold down different elements of a page.

User experience (UX) describes how user-friendly a product is. Is it straightforward and easy to use? Do pages load quickly? Is the product a joy to use or frustrating?

During your initial ideas, you are mostly focusing on the UI. When you come to make your actual product, you will want to make sure you have good UX.

Lorem Ipsum

When you see examples of design **mock-ups**, you often see text that appears to be Latin filling the space. This is placeholder text that is used to show someone where text will go. It is to demonstrate different fonts or typography that will be used. The text itself is meaningless but it is useful for helping someone picture how a final product will look. For your initial design ideas, you may wish to use Lorem Ipsum to fill the space where you intend for text to go later. However, if you are only having short pieces of text, such as a title, date or short phrase, you might choose to include these in the initial idea.

The common version of Lorem Ipsum is:

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

When creating your initial ideas, you might want to use a Lorem Ipsum generator, such as www.lipsum.com or <https://loremipsum.io>. You can then copy and paste the text in your work.

ACTIVITY: Responding to client feedback

■ ATL

■ Collaboration skills: Listen actively to other perspectives and ideas

Now that you have shared your original ideas with your client, you can **explain** which idea(s) you will **develop** further and why. Use feedback from your client to **justify** your decision. Remember, you might be taking one singular idea forward, or you might be combining different ideas. Your client might have given you new ideas you had not thought of, which you can incorporate into your final design. You should also **describe** how your final design idea will meet your design specifications and, most importantly, how you anticipate it will solve your client's problem.

Sometimes a client likes an idea that is not your favourite or gives you feedback you might not agree with. Remember that 'the customer is always right'. If you think their feedback is steering you down a dangerous path, will not solve the problem or will be bad design, make sure you negotiate with your client so you come to a common consensus.

If you were working as a designer, this is a very important step. You are showing that you are responding to the client's needs and wants. When you move forward and **create** your product, they will feel involved and will have already agreed to your final idea. If you decide to ignore your client's feedback, however, they may make you do a redesign or refuse to pay you.

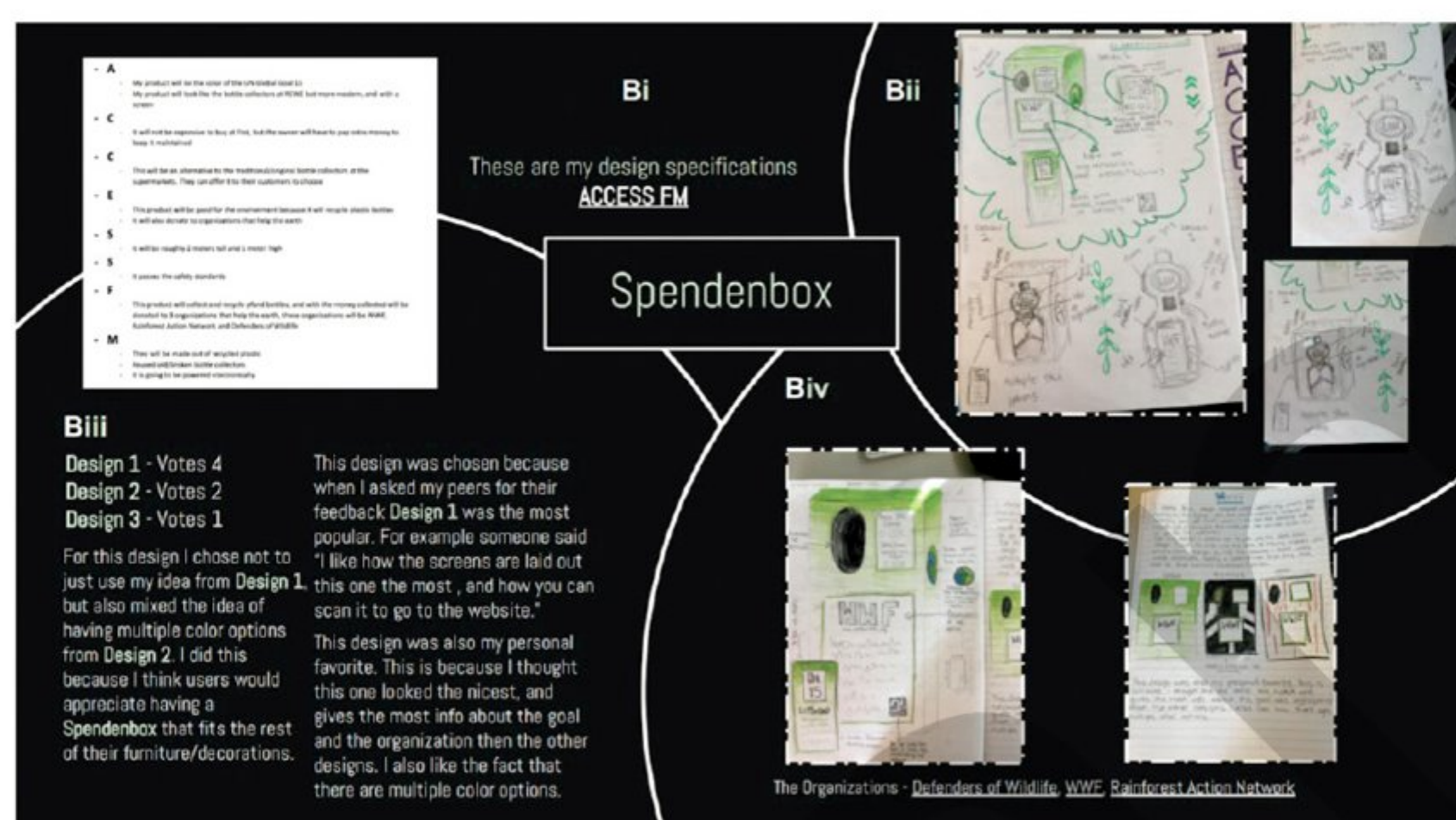
◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B iii: Present and justify the chosen design.

ACTIVITY: Mock-up and plan

■ ATL

- Creative-thinking skills: Apply existing knowledge to generate new ideas, products or processes



- **Figure 5.10** You can see how this student has developed their ideas, and how the level of detail in the sketches has improved from B ii to B iv

Using the feedback, generate a final mock-up of your idea. This version should have more detail, for example, adding accurate measurements, colours or the actual text you will use. If you were working as a professional designer, you could imagine that you were making a plan detailed enough that if you handed it off to a manufacturer or colleague, they would be able to create your vision easily.

You need to make sure your plans are detailed and accurate. These plans might take the form of a wireframe, storyboard or other mock-up. You should also **outline** any information needed to understand how to create the chosen solution. This could be anything from

the name of the font you will use, through to the names of colours you will include in your design. You should add detailed annotation so that your design can be easily understood. You should **list** any requirements needed to **create** the solution, using correct terminology.

Alongside your final mock-up, you should **create** a detailed, logical plan that **describes** how you will make your final product. This will include not only step-by-step instructions but also any tools or materials you will use. As your final product for this chapter is most likely a digital product, this could be the name of the software you will use, the version of the software and any of the software's tools.

You should also work out how much time you have to work on your product before the deadline you agreed on in your specifications. Break down your plan into parts that fit into the time you have left. Make sure to give yourself a buffer in case anything goes wrong, takes longer than expected or for any other unforeseen situations, for example if you are sick during one of your lessons. Make sure you think about how much class time you have available, then you can add in any time you will work on the product outside of class. Be realistic and don't give yourself too much work to do at home.

Once you have your final design and plan, you might choose to get one more round of feedback from your client before you make your final product. You may also choose to get feedback from a classmate or teacher, to see if your plan is detailed enough and realistic.



You can choose the format for your logical plan or follow this table. You could even add a column to reflect on each step – for example, if you completed it, or if you had to make changes – and another to add screenshots to show your progress.

Step	Description	Resources	Time	Deadline
Instructions:	In this column you describe the steps you need to take. Be specific. This might include using the correct name of any digital tool you use, correct colours and measurements.	This includes any tools and materials you use, as well as software, websites and other digital tools. Also list anyone who helps you at any stage, for example to take photographs.	This describes how long you think each step should take. You can put a range to allow for any changes, for example 15–30 minutes.	This is the final deadline you need to meet to complete the step. You might write a date or a lesson number.
1				
2				
3				
4				
5				
6				

■ **Table 5.5** A template you can use for your plan

◆ **Assessment opportunities**

- ◆ This activity can be assessed using Criterion B iv: Develop planning sketches and C i: Construct a logical plan.

ACTIVITY: Take action

■ ATL

- Creative-thinking skills: Create novel solutions to authentic problems



■ **Figure 5.11** IB students creating their final products

Now it's time to take action and **create** your final product. It could be an animation, poster, video, app, website or other solution. Whatever it is, make sure you document each step of the process. You can do this through photographs or screenshots and add labels to show off new techniques and skills you are using. Often when someone sees a final product, they can't see all the hard work that went into making it, so make sure you show off all the steps you took to make your solution.

By taking photographs or screenshots of the process, you can also show how you followed the logical plan you created earlier. You could even copy your plan and add images to show how you followed each step. If you had to make any changes, make sure to **justify** why you made these changes. This could be because you found an easier or better way to do something – but not because you ran out of time or found a way that required less effort. All changes made should not lessen the quality of your final product.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion C ii: Demonstrate technical skills, C iii: Follow the plan to create a solution and C iv: Justify changes made to the plan.

ACTIVITY: Did I solve my client's problem?

■ ATL

■ Collaboration skills: Help others to succeed

When you have created your final product, you need to assess how successful it was, how it could be improved and what **impact** it will have.

- **Success:** When you assess this, remember to use your specifications, including the testing methods you designed, feedback from your client and target audience. Then assess if the problem you identified was solved. How much has your product helped the service activity, club or event?
- **Improvements:** Identifying areas for improvement does not mean that you have to **identify** areas of failure in your design. Imagine that you now had a lot more time, money and design knowledge/skills – what would you do differently if you were to remake the product? Now that you are able to get feedback on your final product, what have other people said they might change? How could you improve the product to help the service club activity, club or event succeed further?
- **Impact:** Did you solve the problem you identified? What impact has your product had on the service activity, club or event you were working for? How has your product helped your service activity, club or event succeed in their aims?

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion D ii: Evaluate the success of a solution, D iii: Explain how to improve the solution and D iv: Explain the impact of the solution.

DISCUSS: Inquiry question

In this chapter you've created an innovative way of raising the profile of a service activity, club or event. You have used your design skills to persuade and encourage people to participate.

Should we have to come up with innovative methods of communication to increase community engagement in service projects?

EXTENSION

In this chapter you have supported an existing service activity, club or event. You might now choose to start your own activity, club or event. How might you use your design skills to take action and extend your new skills further? You might decide to start a club that uses graphic design and illustration to **create** posters to raise awareness of something you are passionate about. Maybe you will start a club that will **create** products to sell to raise money for a local charity. Maybe you will hold an event where you teach people in your community new design skills.

If you are stuck for ideas, check out the project examples on Do Something:

www.dosomething.org/us

! Take action

! In this chapter you have taken action by supporting a service activity, club or event in your school. As you are helping members of your community through your design, you could consider this a service activity in itself. You may wish to reflect on this unit as a service activity using the following prompts:

Learning outcome for service	Reflective prompts
Become more aware of their own strengths and areas for growth	What design skills did I use for my product? (You may wish to describe technical skills or approaches to learning.)
Undertake challenges that develop new skills	What new design skills did you develop during this project? (You may wish to describe technical skills or approaches to learning.)
Discuss, evaluate and plan student-initiated activities	What action did you take to support and promote the service activity, club or event you were focusing on? (You may wish to describe your final product.)
Persevere in action	What challenges did you face and how did you overcome them? (You may wish to describe any changes you made to your plan.)
Work collaboratively with others	How did you work with your client? How did working with your client lead to a better solution? (You may wish to describe initial research or how you responded to client feedback.)
Develop international-mindedness through global engagement, multilingualism and intercultural understanding	How did your design solution benefit your community and/or the wider community? (You may wish to describe how your product directly benefited the organizers of the club, event or activity you were focusing on, or the knock-on effects of who the club, event or activity benefited.)
Consider the ethical implications of their actions	How did you make sure you worked as a principled designer? (You may wish to describe ethical choices you made in relation to materials and tools you used.)

Reflection

In this chapter we found out about service initiatives happening in our schools. We explored ways to promote these activities and took action to increase participation in these initiatives.

Use this table to reflect on your own learning in this chapter.					
Questions we asked	Answers we found	Any further questions now?			
Factual: What service projects are happening in our community? How many people know about these projects? How do they find out about the projects? How can we make sure this information is communicated clearly to the various members of our community?					
Conceptual: How might the existing service projects be better promoted? How can we raise awareness of service projects happening in our school?					
Debatable: Should we have to come up with innovative methods of communication to increase community engagement in service projects?					
Approaches to Learning you used in this chapter:	Description – what new skills did you learn?	How well did you master the skills?			
		Novice	Learner	Practitioner	Expert
Communication skills					
Collaboration skills					
Organization skills					
Reflection skills					
Information literacy skills					
Critical-thinking skills					
Creative-thinking skills					
Learner profile attribute(s)	Reflect on the importance of being a communicator for your learning in this chapter.				
Communicator					

6

How can we apply the elements of a game to exercise?

- Products can **function** to help us make **developments** to improve our **health, well-being** and to make better **lifestyle choices**.

CONSIDER THESE QUESTIONS:

Factual:

What makes something a game?
Why do we like games?

Conceptual:

How can we apply the principles of gaming to exercise?

Debatable:

Are digital devices making us less healthy? If it's 'good for us' should we just do it ... ? How can we use the principles of game play to make exercise more appealing?

Now **share** and **compare** your thoughts and ideas with your partner or with the whole class.

KEY WORDS

gamification
game mechanics



■ **Figure 6.1** Why do we like games?

○ IN THIS CHAPTER, WE WILL ...

- **find out** about gamification
- **explore** how gamification can motivate us to exercise
- **take action** by creating a product that gamifies exercise.

■ These Approaches to Learning (ATL) skills will be useful ...

- | | |
|------------------------|-------------------------------|
| ■ Communication skills | ■ Information literacy skills |
| ■ Collaboration skills | ■ Critical-thinking skills |
| ■ Organization skills | ■ Creative-thinking skills |
| ■ Reflection skills | |

▼ Links to: PHSE

As you are designing a game to help someone exercise more, use your experience from your PHSE classes to support your learning, particularly preparing for performance and coaching.



● We will reflect on this learner profile attribute:

● Balanced

We will use gamification to not only focus on the physical development of our target audience, but the intellectual and emotional development. We recognize that all three areas need to be developed to support the well-being of our client.

◆ Assessment opportunities in this chapter:

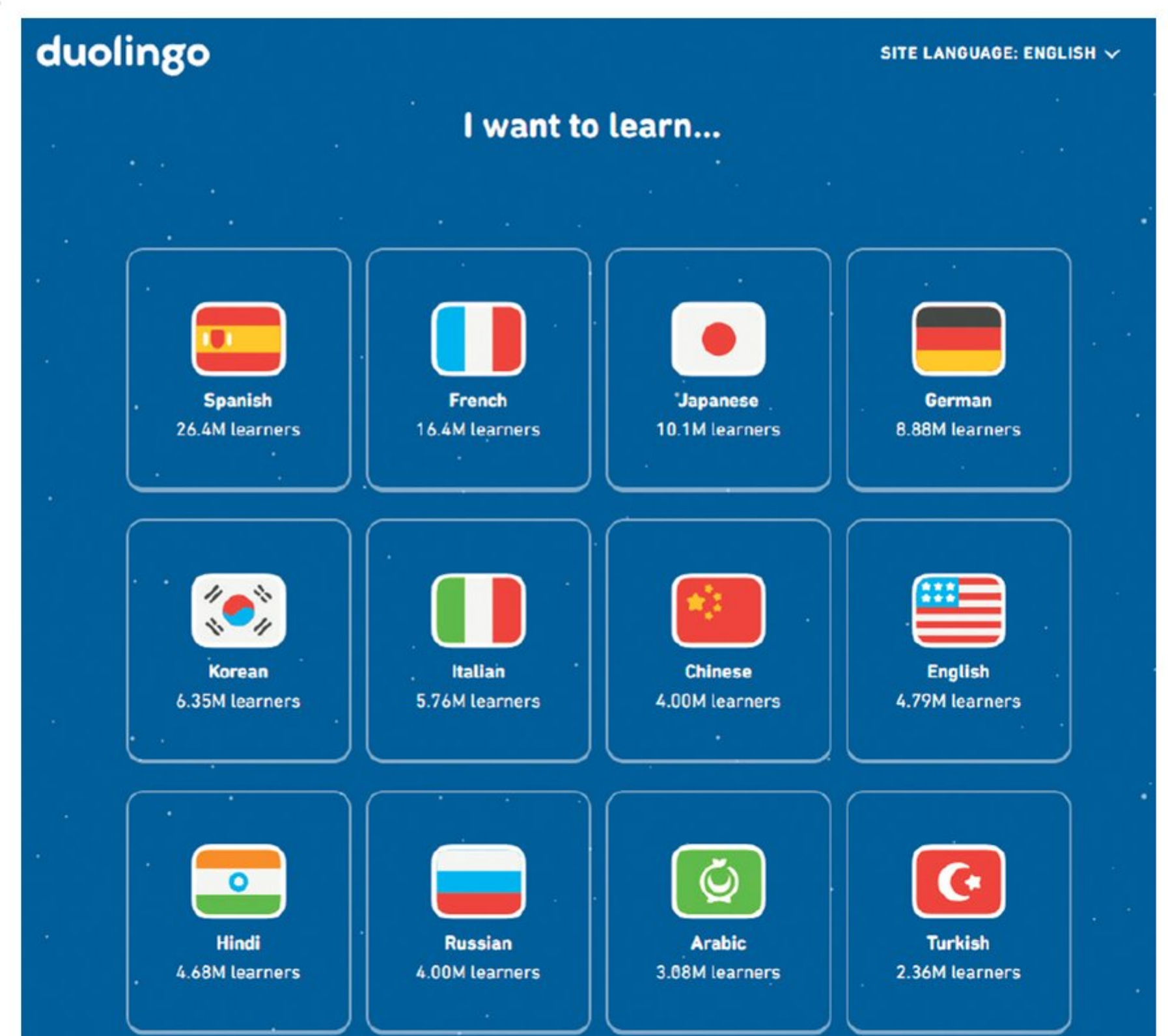
- ◆ Criterion A: Inquiring and analysing
- ◆ Criterion B: Developing ideas
- ◆ Criterion C: Creating the solution
- ◆ Criterion D: Evaluating

WATCH AND DISCUSS

Watch the video: https://youtu.be/_Gh5D1Qu774

Can you **describe** what gamification is? Are there any quotes that stand out to you from the video to help you with your definition? Now that you have learnt more about gamification, can you think of any more examples?

In this chapter you will learn all about gamification and how this can help someone be healthier through motivating them to exercise more. Gamification is when you add gaming elements to non-games. These elements can include leaderboards, rewards, badges, points and more. You may be familiar with this already from educational websites such as Khan Academy or Duolingo, where you level-up and earn badges through participation. Many products, from websites to apps, and many industries, from education to marketing, are already using gamification to encourage their users. In this chapter you will be exploring how gamification is used in the fitness industry. Although many of the suggestions and existing products you explore will be digital solutions, there will also be suggestions for some low-tech solutions.



■ Figure 6.2 Duolingo uses gamification

What makes something a game?

DISCUSS

■ ATL

- Information literacy skills: Make connections between subject groups and disciplines

As this chapter has cross links with Science and PHSE, discuss with a partner what skills and knowledge you might use from these subjects. Are there any subject-specific resources you might use to support your learning in this chapter?

WATCH AND DISCUSS

Watch the video: <https://youtu.be/QPqR2wOs8WI>

A game is a construct that organizes play through a series of rules, for the purpose of achieving a set of goals, overcoming an obstacle, and/or attaining an objective.

(Source: Crash Course)

What makes something a game?

Can you come up with your own definition of a game? See if you can **describe** what a game is in a more clear and concise manner.

Extend your thinking with the following question: 'Why do we like games?'

You can give examples of games you like/dislike to **justify** your answer.

ACTIVITY: Game mechanics

■ ATL

- Critical-thinking skills: Gather and organize relevant information

Game mechanics are the rules and elements you need to make a game. They include leaderboards, rewards, goals, points, badges and more.

On a piece of paper, write down a **list** of examples of game mechanics. As you work your way through this chapter, keep adding to the list. This will be useful when **analysing** existing products and planning your own solution.



■ **Figure 6.3** Game mechanics

EXTENSION

Learn more about gamification here:

- www.gamify.com/what-is-gamification
- <https://greatist.com/live/gamification-fitness#unique-apps>
- www.healthline.com/health-news/turning-exercise-into-a-game-can-make-fitness-more-fun-and-effective#Leveling-up
- <https://medium.com/nyc-design/what-is-gamification-how-points-badge-challenge-and-charts-boost-the-companies-annual-turnover-447568b92e61>
- www.youtube.com/watch?v=iX3zQo_TCM0&ab_channel=Gamify
- www.youtube.com/watch?v=nq4ufkSVa3c&ab_channel=HackCollege

DISCUSS

Do you get the recommended amount of exercise (one hour every day)? Why/Why not?

Design situation

After a recent study showing that young people are spending more time online than ever, a grant has become available for designers who are creating products that get young people to exercise more. The study focused on problems related to sitting for too long, not increasing your heart rate and not getting enough fresh air. The product should work towards solving these problems. Grants will be awarded to innovative designers who appeal to young people.

You may wish to **define** your target audience more – for example, young people who live in a certain area. This

could be an urban and hilly area. It could also be young people involved in a sport, or those involved in a sports club, for example.

Alternatively, you may wish to focus your design on another target audience, such as those who have other barriers to exercise. This could be people with limited mobility due to injury or someone with limited access to outdoor space/equipment.

Note: You might be designing a full product, for example a gamified app focusing on the coding and **user interface**. You might also decide to focus on creating elements of a product, such as using graphic design to **create** a range of digital badges.

Recommended exercise levels for school-aged children and adolescents (ages 6 through 17 years):

Children and adolescents ages 6 through 17 years should do 60 minutes (1 hour) or more of moderate-to-vigorous intensity physical activity each day, including daily aerobic – and activities that strengthen bones (like running or jumping) – 3 days each week, and that build muscles (like climbing or doing push-ups) – 3 days each week.

(www.cdc.gov/physicalactivity/basics/children/index.htm)



■ **Figure 6.4** With an increase in the amount of technology that young people use, there are concerns that they don't exercise as much as they should

ACTIVITY: The kids aren't alright

■ ATL

- Media literacy skills: Seek a range of perspectives from multiple and varied sources

As explained above, young people are exercising less than they should be. You need to find more information to **explain** the problem in detail. This should include verifying if this is actually true and also explaining the possible reasons why this might be. You should look for information from various sources to help you **explain** the problem. You also need to **justify** why you need to solve it through your gamified exercise product.

You may wish to do some primary research by interviewing or surveying your peers. You may use your own experience as an example but must not rely on this alone. Interviewing your Science or PHSE teachers for this activity may be helpful too.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A i: Explain and justify the need.

EXTENSION

You may wish to read some of the following articles or find some of your own to better understand why young people are exercising less and why they should exercise more. This may help you understand the problem you are tackling, which will help you when designing your solution.

- [www.healthline.com/health-news/turning-exercise-into-a-game-can-make-fitness-more-fun-and-effective?](http://www.healthline.com/health-news/turning-exercise-into-a-game-can-make-fitness-more-fun-and-effective?hpid=hp-news%3Aexercise%3Aturning-exercise-into-a-game-can-make-fitness-more-fun-and-effective%3Astory%3A%3A)
- www.theguardian.com/society/2019/aug/26/uk-teens-exercise-screen-time-guidelines
- <https://medicalrepublic.com.au/teens-not-exercising-enough/24169>
- www.nhs.uk/live-well/exercise/physical-activity-guidelines-children-and-young-people
- www.cdc.gov/physicalactivity/basics/children/index.htm

How can we apply the principles of gaming to exercise?

TRIANGULATION

Triangulation is when you look at various sources to get a better understanding of a topic. It also means using the sources to verify the information you have uncovered. As hinted by the word triangulate, you should look for three sources that confirm or validate each other. If you find information from just one source, it might not be accurate or reliable. If you find it from other reliable sources, it is more likely to be true.

Make sure you also use your other research skills to select the information you use. This could be making sure they are current and from reliable sources and making sure they contain facts, not just opinion.

The best sources you find will also use triangulation. When you look at sources such as articles, books or websites, look to see the sources they referred to. Often people look at Wikipedia as a first source for information – it can be useful to use the sources in the ‘references’ section.

ACTIVITY: What else do you need to know?

■ ATL

- Information literacy skills: Make connections between various sources of information

You should now have clearly **defined** the problem you are going to solve, including the causes. Now you need to do some more research to help you **develop** ideas for your solution. Instead of focusing on the negatives (the barriers to exercise), think about the things that motivate your target audience, which you can co-opt for your product.

You might wish to focus on gaming and finding out what games they like and why. Does your target audience enjoy racing games, like Mario Kart, for example? You might wish to choose a similar theme for your solution. You might want to think about other hobbies, interests and motivations the students have and why. For example, if your target audience likes punk music, you might wish to use this in your solution. You may even wish to be direct and ask your target audience what they would like to see in your finished product.

Decide which information you need to help you **develop** your solution. Come up with a **list** of questions you need to answer to help you move forward with your design. Write down where the information will come from, how you will gather the information (for example, photos, interviews, surveys) and make sure to include a mixture of primary and secondary sources.

Note down how important each question is. You could use the ‘high, medium or low priority’ or ‘need to know/want to know’ rating system. You may wish to have multiple sources to help you answer each question. It might be helpful to put this information into a table before you seek answers.

Remember that you should be doing your research because it is helpful. Your answers should **impact** your design and the choices you make moving forward. Research should never just be done for the sake of it, to tick a box or because you have certain criteria to meet.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A ii: Identify and prioritize the research.

ACTIVITY: Gamification apps

■ ATL

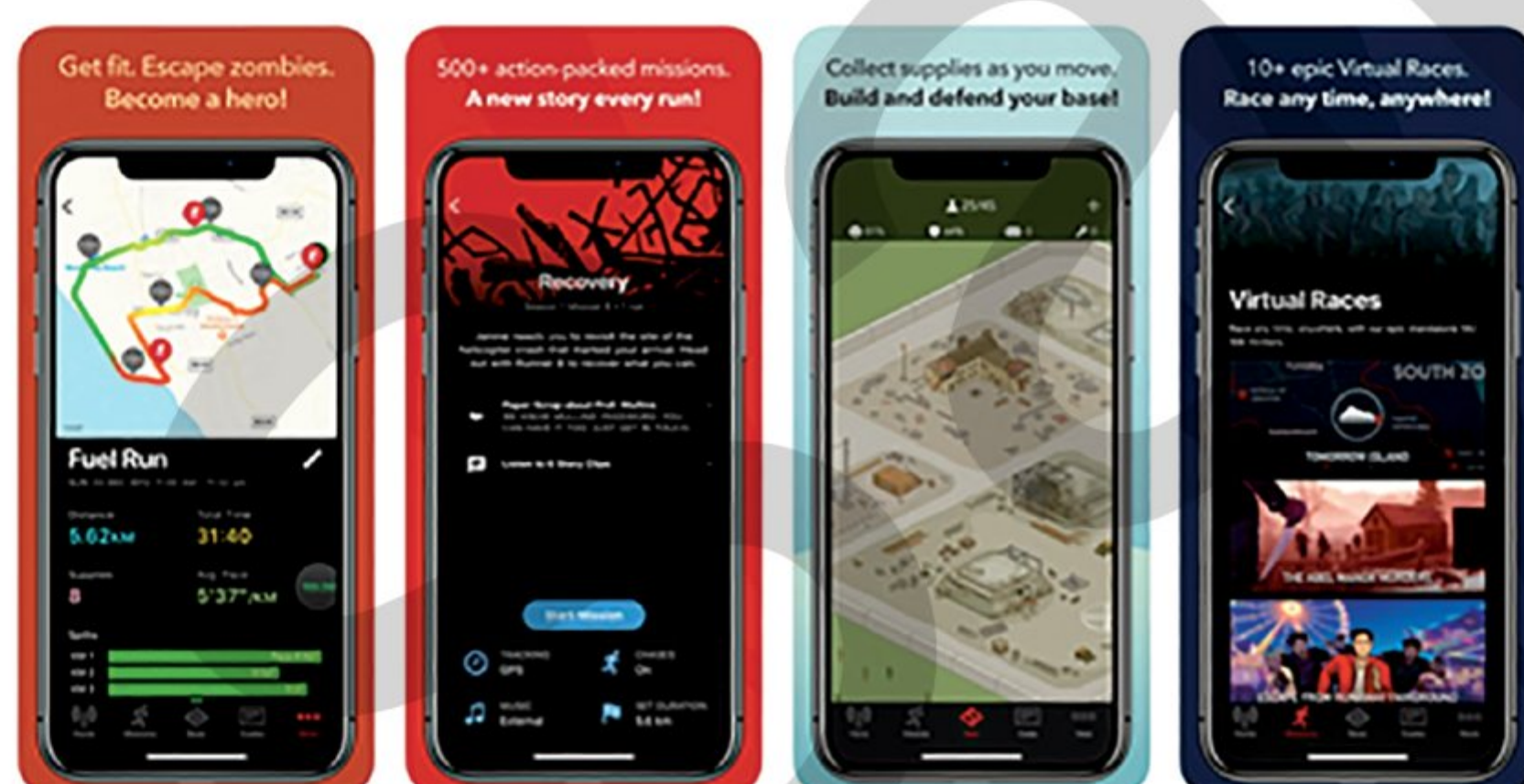
- Information literacy skills: Collect and analyse data to identify solutions and make informed decisions

There are many existing gamification apps that may inspire you for your solution. When reviewing these apps, you should be able to **describe** what they do, how they do it and also how successful they are at doing it. A useful source might be online reviews. However, you should consider the reliability of these. Do people tend to write reviews mostly when they are keen on a product or disappointed with it? Are the people who are reviewing the apps the actual target audience? Are there other things that might make these reviews biased? Equally, if you look at information provided by the app developers, be aware that it is in their interests to positively promote their products.

When **analysing** the apps, make note of the target audience, what sort of exercise they encourage the users to do and any game mechanics used to gamify the experience. For the initial analysis, use the information you can find online about the sources. Once you have done a rough analysis on a few apps, pick a few to **analyse** further. Do this by downloading and **testing** the apps.

Zombies Run

<https://zombiesrungame.com>



■ **Figure 6.5** Storytelling is a fun way to give variation to exercise

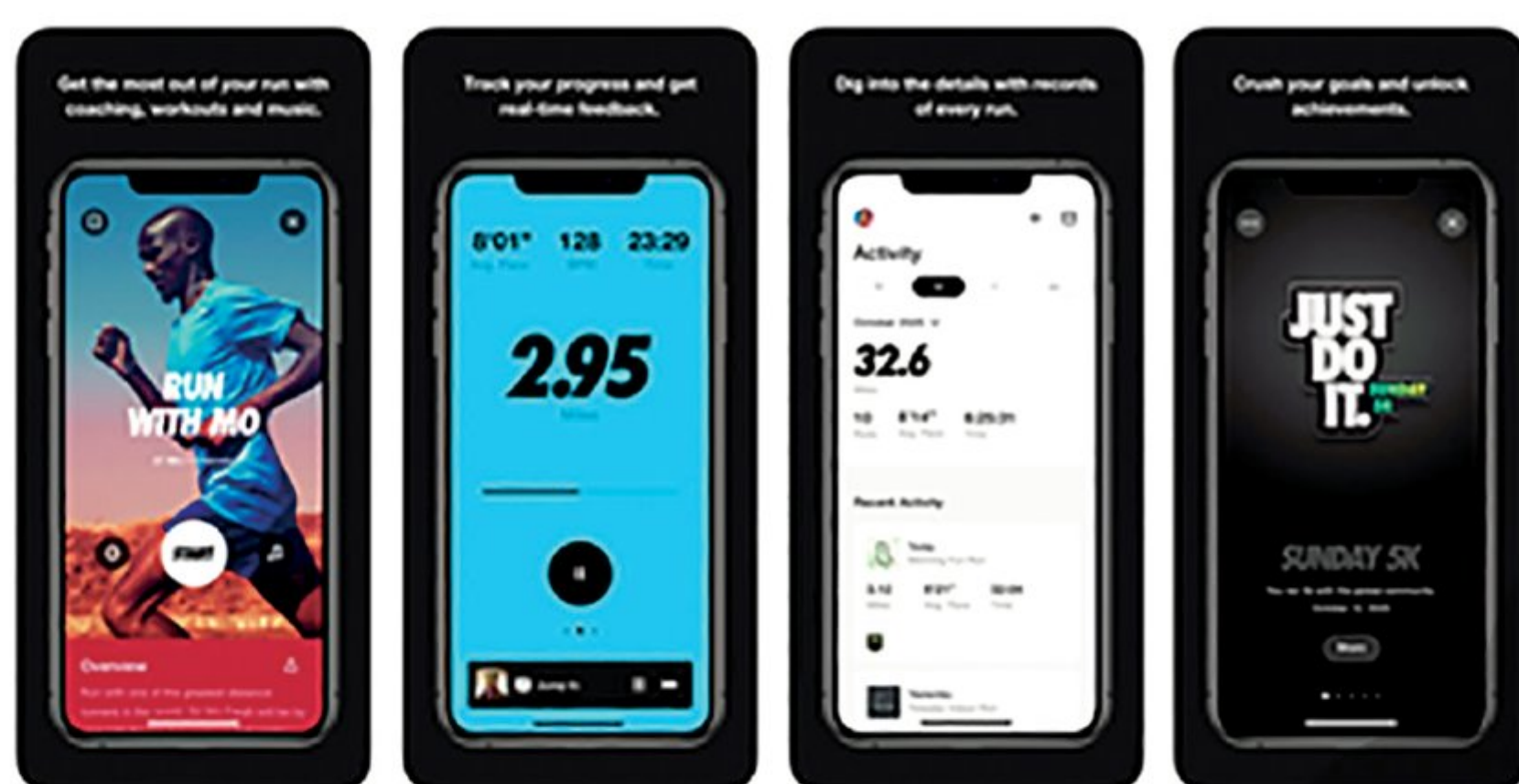
Listen to this app while walking, running or jogging. Each time you listen you'll hear a new part of the story themed around a post-apocalyptic world filled with zombies. You'll go on different missions while avoiding zombies and collect supplies the more you run.

The developers, SixToStart, also developed 'The Walk', which uses gamification to encourage users to walk, while telling them a thrilling story.

Why do we like games?

Nike Run Club

www.nike.com/nrc-app

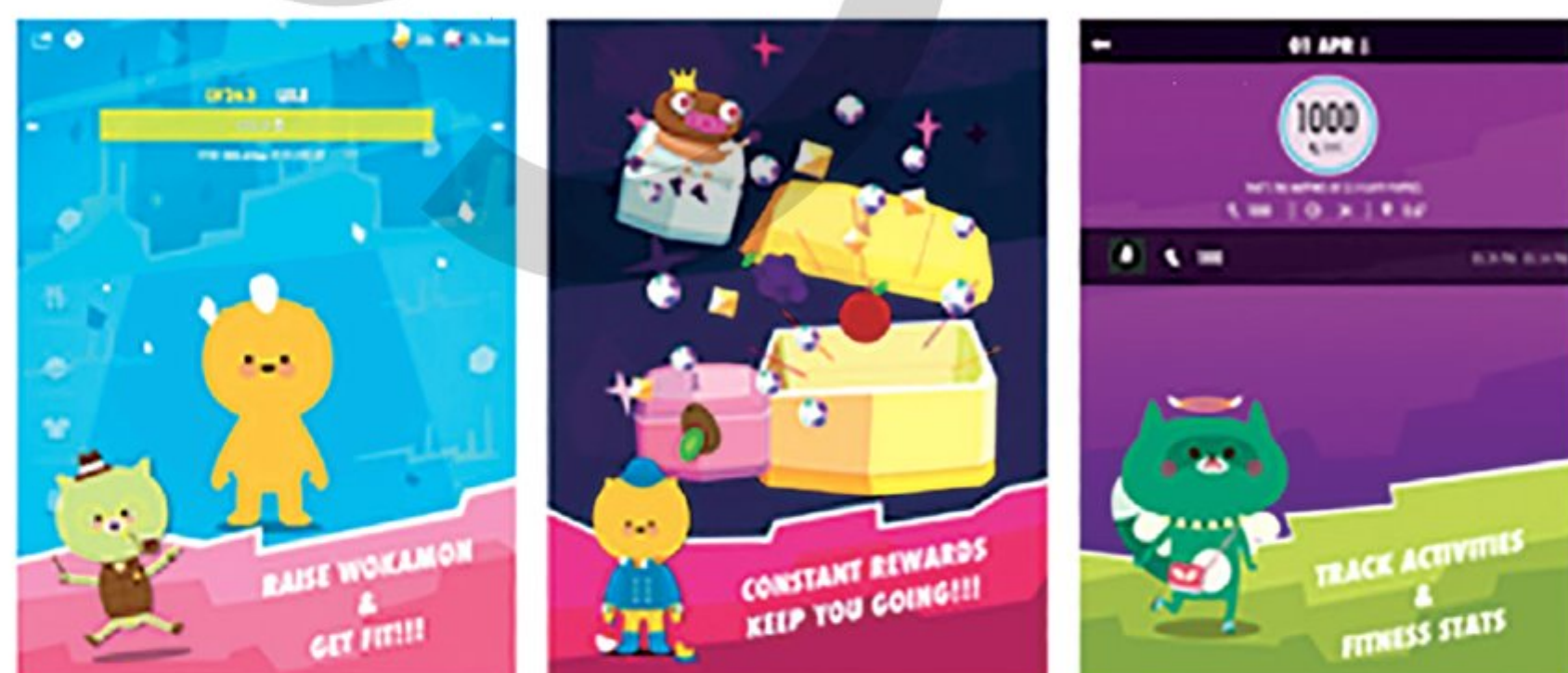


■ **Figure 6.6** Connecting with others for individual exercise is often helpful for motivation

Nike Run Club motivates users to run by tracking their journey, distances and speed. It also uses playlists, social elements and even encouragement from athletes to motivate users to run further, faster and more often. The app allows users to compete with friends or strangers and to set their own goals. Nike has also developed a 'Nike Training Club' app for other types of exercise.

Wokamon

www.wokamon.com



■ **Figure 6.7** Apps can offer digital rewards

This app combines a pedometer with a virtual pet. The more you walk, the more energy you collect for your pet, and the more energy the pet has, the more of the virtual world they explore.

Other apps

Other apps to explore include: CARROT Fit, Fitbit, Fitness Pets – The less serious fitness tracker, Fitness RPG, Fitocrazy, Fitrockr, Get Fit Puzzle, Hops – Journey of Tree Spirit, Jefit, Outwalk – Motivate and Walk with Friends, Standland, Strava, Stroll – Walking Tracker, Walkr:Step Count Fitness Game and YaoYao – Jump Rope.

Although not a fitness app, you may wish to **analyse** Pokemon Go, which uses distance walked in its game play.

Looking at the apps you reviewed, what makes them special or different? It could be anything from the theming through to how it technically works. When analysing the existing products, make sure to describe their **unique selling point (USP)**.

You may wish to write your analysis in a similar style to how online review websites or you might mirror YouTube app reviews. Make sure to highlight the elements you like and dislike, showing what you might use or will avoid in your own product.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A iii: Analyse existing products.

Get Active at School or at Home!

Kids can make an impact whether they are together face-to-face or participating remotely at home this year.

Classrooms & Schools



Build a strong class community by playing videos together in class, via video meeting... or assign videos directly to your students at home.

Families at Home



Sign up as a family or click a link sent by a teacher to play videos. Let kids get the wiggles out, so they are ready to focus on their lessons at home... or just have fun together!

Groups & Clubs



Get active as a team by unlocking impact during out-of-school time. To participate, leaders can send kids a link, or groups can watch videos as a group in person or virtually.

■ **Figure 6.8** UNICEF Kid Power

The examples shared in this chapter are mostly apps, which require a smartphone, watch or tablet and for the user to download them. There are other examples of products made to gamify exercise, however, such as the websites GoNoodle or UNICEF Kid Power.

You could also go for a lower-tech version, where you **create** digital products, such as online docs or videos that your user accesses by scanning a QR code. You could even do a lower-tech version, where you **create** a poster, booklet, card, trading cards, diary templates, reward chart or other paper product.

USE AND INTERPRET A RANGE OF DISCIPLINE-SPECIFIC TERMS AND SYMBOLS

Real designers work with other industries and so need to use the correct discipline-specific terms and symbols in their designs. Depending on the **design situation**, designers will need to use different vocabulary. This will help them create accurate products and connect with their target audience.

Imagine you are a designer creating a product for the automobile industry, medical industry or education industry – what sort of terms and symbols would you need?

For this chapter, you might need to use terms and symbols related to health, fitness, science or technology, for both your design **brief** and also any **copy** used in your product. If you are unsure if the terms and symbols you are using are correct, find an expert to proofread your work.

DISCUSS: Carrot or stick?

Looking at the apps on pages 123–4, do you think there is an element of guilt involved in motivating the user to exercise? What are the advantages and disadvantages of this? Do you respond better to guilt or rewards? Why?

THINK–PAIR–SHARE

Game mechanics: 'How can we apply the principles of gaming to exercise?'

You might wish to use examples from the apps you **analysed** or **describe** the game mechanics you want to use in your own design.

How can we use the principles of game play to make exercise more appealing?

ACTIVITY: Design brief



■ ATL

- Communication skills: Paraphrase accurately and concisely

Use the information you have uncovered so far to **describe** what you will make, why and what will make your product special.

Write your design brief in a few clear and concise paragraphs, or as a detailed bullet pointed list. You should include the most important information you learnt about the problem you are solving, the key information you found through your research, as well as useful information from your app analysis.

Explain why the information you are using is relevant and reliable, citing all important information and, if relevant, add your own primary research as an appendix entry.

Make sure to **describe** the game mechanics you will use (the goal and the elements that will motivate the user), and the theming, the types of exercise and what will make your product special (the USP).

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A iv: Develop a design brief.

TESTING METHODS

Product testing: This is a stage in the design process where versions of products (for example, **prototypes**) are tested against the design need (**specification**), applied to the context and presented to the end-user or target audience. These tests may include the collection and analysis of data. Types of testing include **user trial** and observation: (usability and intuitiveness), **field/performance test:** (**functionality** and performance), **expert appraisal:** (beta testing, consumer testing).

Authentic tests: The tests are relevant to the project and are completed by appropriate testers to gain high-quality quantitative and qualitative **feedback**.

The testing methods you design will depend on your final product. If you are creating a complete product, then you can easily do field/performance tests, user trials and observations. If you are creating part of a product, it might be best to get feedback from an expert and your target audience.

Using a range of testing methods will help you better understand the success of your product, as well as how it might improve.

DISCUSS

What skills and knowledge can you use from your science and PHSE classes to help you design your testing methods?

ACTIVITY: Design specifications



■ ATL

- Transfer skills: Make connections between subject groups and disciplines

When creating your design specifications for your final product, you should bring in some of your knowledge from science and/or PHSE to help you. Your specifications should **describe** the success of the product, which will connect to having a healthier target audience who are ultimately exercising more. You might use existing knowledge from science and/or PHSE or you might need to attain some new knowledge through interviewing the subject teachers. You will need to use subject-specific terminology linked to fitness, the body, exercises, specialist equipment and other relevant vocabulary. It might be helpful to write out a **list** of relevant words, creating a word bank that will help you when writing your specifications.

You may also wish to use your knowledge from those subjects when thinking about how you will assess the success of your specifications. For example, if you know that young people need to do 60 minutes of vigorous exercise every day, you can set this as your goal for when you test your app.

Note: It's also important to make sure you use your knowledge from science and PHSE classes to make sure your target audience is safe. For example, that they are not exercising too much or that they are doing exercises safely.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B ii: Develop a design specification and D i: Develop testing methods.

ACTIVITY: Developing initial ideas

■ ATL

- Creative-thinking skills: Apply existing knowledge to generate new ideas, products or processes

When developing your initial ideas for your product, you should include the goal, theme, game mechanics and **aesthetics**. Be as detailed as possible. You might include specific information about levels, rewards, social elements, exercises, equipment, and so on. Even if you are just designing the visual element, for example, using graphic design to create reward badges, you should still plan for the app as a whole, as this will show how your part fits in with the bigger picture.






You can **present** your initial ideas in a table. Try to **create** at least four ideas.

Fitness Gamification Examples: Make Your App Fun and Engaging: <https://madappgang.com/blog/fitness-gamification-examples-make-your-app-fun-and-engaging>

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B i: Develop design ideas.



Idea	
<div>Goal</div> <div></div>	<div>Idea One: Rock Star Reps</div> <p>This app focuses on strength training, with the ‘player’ increasing their ‘reps’ (repetition of each movement) as they get fitter.</p> <p>The app includes exercises for different parts of the body, including abs, arms, legs and back. All exercises can be done without equipment and can be completed in small spaces (for example, in the player’s bedroom).</p>
<div>Theme</div> <div></div>	<p>The app is themed around ‘rock stars’. As the ‘player’ levels up, they ‘unlock’ new items/levels, which include better musical instruments, skills and playing at bigger venues. The app has an avatar that develops as the player gets fitter.</p>
<div>Game mechanics</div> <div></div>	<p>Levelling up: From ‘garage band’ to ‘stadium fillers’.</p> <p>Leaderboards/social: Players compete with friends or join leaderboards with players they don’t know (only usernames will be shared, no personal details).</p> <p>Rewards: Players unlock new badges, but also equipment/clothes, which they can use to customize their avatar. This is done through trying new exercises, reaching streak goals, increasing reps, sharing achievements on social media and more.</p> <p>Streaks: Two rest days are allowed a week – if users exercise the other five days, they can keep adding to their personal streak. This will also unlock rewards.</p>
<div>Aesthetics</div> <div></div>	<p>The full app is animated/illustrated, with no photos/videos. This includes animations showing how to do the exercises safely.</p> <p>The style has bright colours and the characters are cartoony. The app makes use of ‘rock star’ iconography, including skulls, lighting bolts, etc.</p> <div></div>

■ **Table 6.1** An example of how you might present your ideas. You can include extra rows to provide further information

ACTIVITY: Which idea is worth developing further?

■ ATL

- Critical-thinking skills: Propose and evaluate a variety of solutions

Before deciding which of your ideas you will **develop** further, assess each idea against your specifications. Which idea meets the most of your specifications? It might help if you assign your specifications different point values or note down which are high or low priority. Specifications linked to solving the problem/ reaching your goal are more important than other elements, like aesthetics. By starting with a focus on the specifications it is easier to take your personal opinion or preference out of the equation – this will help you objectively pick the best idea. It might also help you to do this in a table.

You can then get further feedback from your target audience or an expert (for example, a science, PHSE or design teacher), which might lead you to combining different elements from your different ideas into your final solution. For example, you might keep the game mechanics and theme of one idea but use the aesthetics of another.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B iii: Present and justify the chosen design.

CREATIVE QUESTIONS

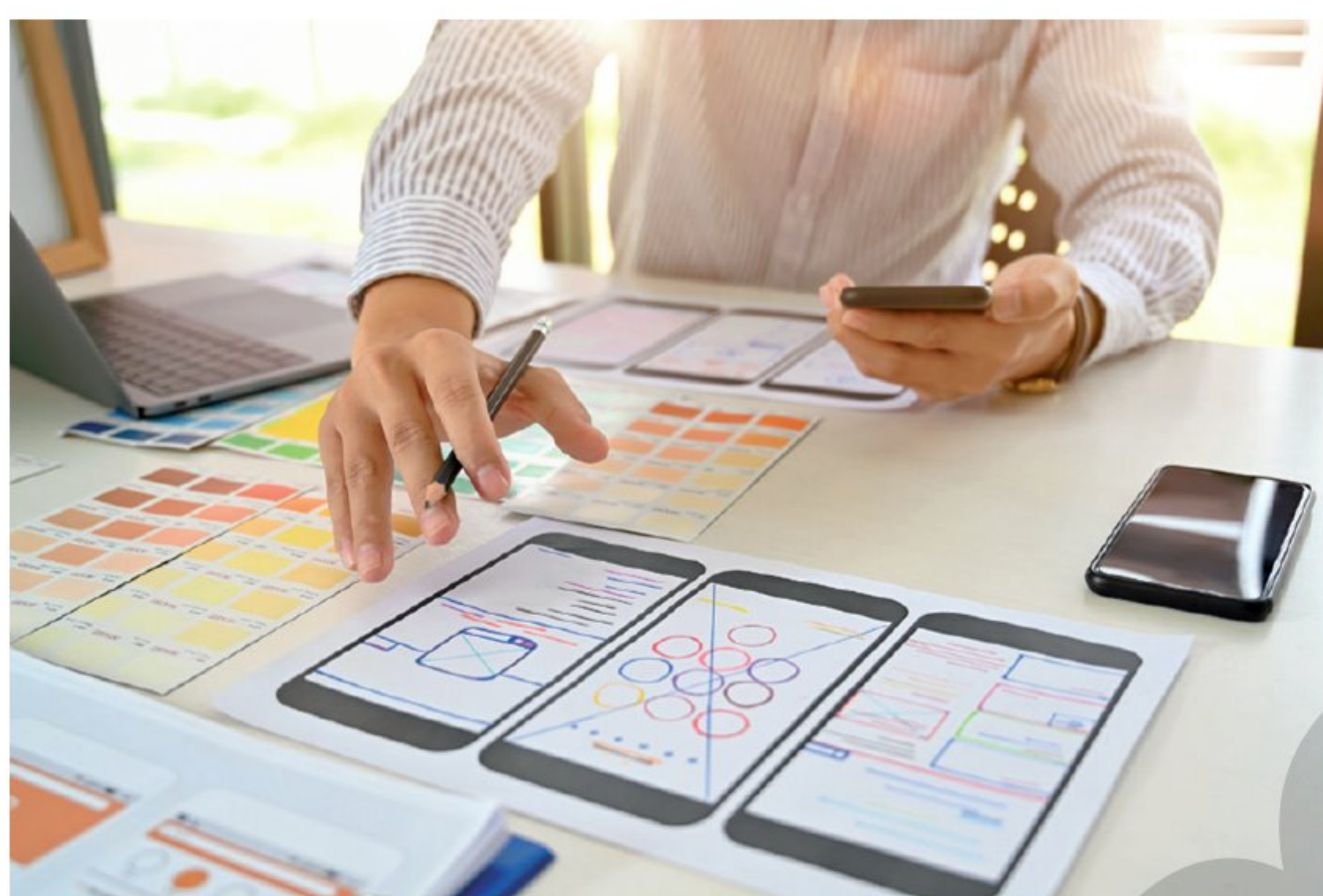
Sometimes, even after designing a range of ideas, you might not have fully solved your solution. Creative questions is a thinking routine that will help you think of different possibilities and changes that might give you more options.

- 1 Pick one of your ideas to explore and brainstorm a **list** of questions about it.
- 2 Look over the list and transform some of the questions into ones that challenge the imagination. Do this by transforming questions along the lines of:
 - What would it be like if ...
 - What would change if ...
 - Suppose that ...
 - How would it be different if ...
 - How would it look different if ...
- 3 Choose a question to explore. Explore it by imaginatively playing out its possibilities. Do this by sketching out your ideas, listing changes to your initial ideas, writing an imaginary interview with the user, sharing your ideas with a classmate or writing an imaginary review of the finished product.
- 4 Reflect: What new ideas do you have about the topic, concept or object that you didn't have before?

ACTIVITY: Sketching it out

■ ATL

- Communication skills: Organize and depict information logically



- **Figure 6.9** You might choose to present your ideas using both digital and non-digital methods. In this example, the designer has printed out templates, which they have added to with pen. You can see they have printed out a **colour palette** to guide them. This helps them visualize the final product if their pens don't match the colours they have planned for

Before you start creating your final product, you should have a clear idea of the visuals. This should be detailed, so that you are only focusing on creating, not designing your product as you are making it. You should add annotations so that nothing is left to the imagination.

Sometimes designers work with other experts to create a final product, so having clear plans, organized logically, helps you communicate and collaborate with others. Imagine that you are a designer who focuses on graphic design but is making an app. You might be making all the visual elements, including planning the layout, but another person would oversee the coding needed for the final app.

You might choose to **create** your plans/diagrams by hand or digitally. Try to make the product look as close to the real thing as possible. This means designing it to scale and using the correct colours.

If you are **creating** visual elements digitally, you might find that it looks almost identical to your finished product, but it might not be scalable, have editable layers or the other layers of detail your final product will have. You also might be using a less-complex software for your plan, which might be quicker and easier, but may not have all the tools you need to make the product fully. You may need to supplement your plans with additional details, such as a colour palette or examples of textures/fonts you will use in the final product.



- **Figure 6.10** At this stage your visuals might look very similar to the final product but might not have the hidden details that will make it more usable for your final product. You might be making your diagrams in a simple program, like Google Drawings, and then making your final product in something more complex, allowing more details, like Adobe Illustrator

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B iv: Develop planning sketches.

How can we apply the principles of gaming to exercise?

ACTIVITY: The next steps

■ ATL

- Communication skills: Organize and depict information logically

Now that you know what you want to make visually, you should plan out how you will **create** your final product. Write a logical plan that lays out the use of time, resources and skills needed to **create** it. This will help you stay on track and allow you to practise as if you were collaborating with other experts. Imagine that you are a graphic designer working with a coding expert to make an app – a logical plan will help you work together efficiently and effectively.

Make a copy of the table below for your logical plan, adding as many rows as needed. Use the last two columns to **describe** your progress, including any changes you need to make, and to show evidence of every step, through photographs or screenshots.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion C i: Construct a logical plan, C ii: Demonstrate technical skills and C iv: Justify changes made to the plan.

Step	Process	Materials/Tools	Date	Time	Progress/Changes	Evidence (Photos/Screenshots)
1						
2						
3						
4						

■ **Table 6.2** Planning the steps of creating your final product

Note: Materials/tools can include software and digital resources used.

DISCUSS

What skills and knowledge can you use from your science and PHSE classes to help you **create** your logical plan?

ACTIVITY: The great reveal

■ ATL

- Creative-thinking skills: Create novel solutions to authentic problems

Think about how you will best **present** your final product. If you have made a complete product, like a full gamified fitness app, you can show the product as is. If you have **created** elements of a product, like reward badges for a fitness app, you may need to make a presentation describing the bigger picture (the complete app), alongside your finished design (your badges).

When showing your final product, make sure you are showing off what makes it special (the USP). Imagine you had been commissioned to design your final product – how might you best unveil it to the **client**?

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion C iii: Follow the plan to create a solution.

ACTIVITY: Compare and contrast

■ ATL

- Critical-thinking skills: Gather and organize relevant information to formulate an argument

Make sure you explicitly reference your specifications when **analysing** the success of your solution, as well as how it can be improved. You should make sure you gather data through the testing methods you designed earlier to help you here. You should also explicitly link to the problem you are trying to solve, so you may bring in some of the initial research you presented in your design brief. Another way of showing the success of your product is by comparing and contrasting your final design sketches to the final product. Use annotations to highlight similarities and differences. Make sure you highlight both the positives and the negatives.

Using this information, show off the impact your product could have on your target audience. Will it make them exercise more? How will this improve their health? Use some of your original research alongside the results from your tests to **justify** your answer.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion D ii: Evaluate the success of a solution, D iii: Explain how to improve the solution and D iv: Explain the impact of the solution.

DISCUSS

Using what you have learnt during this unit, your own experiences and your reflections on your finished product, answer the following question:

'Are digital devices making us less healthy?'

To help you answer the question you might want to make a **list** of ways digital devices can make us healthier or unhealthy.

DISCUSS

With a partner, discuss the following inquiry question:

'If it's "good for us" should we just do it ... ?'

EXTENSION

Now that you have learnt about gamification, can you think of areas of your life that might be improved through gamification? You might use an educational product that uses gamification, such as Duolingo or Khan Academy to learn a new skill. You might use a habit forming/ breaking gamified product like Habitica or Epic Win. You might use a focus gamification app like Forest App or Bounty Tasker to help you be less distracted. If you can't find a gamification tool to help you, you could design your own.

! Take action

! Apply learning through action. Work with a teacher to **design** a product that will gamify the classroom experience. You might find inspiration by looking at Class Dojo, ClassCraft or through clicker apps such as Kahoot or Quizizz. You could also run an event at school, linked to a service, which uses gamification as motivation.

Reflection

In this chapter you have used gamification to motivate your target audience to exercise more. Gamification can be used to motivate people to change all sorts of behaviours, from studying more to quitting an unhealthy habit. However, if we have the knowledge and information that something is harming us or that a change of behaviour can improve our lives, should that be enough?

Use this table to reflect on your own learning in this chapter.					
Questions we asked	Answers we found	Any further questions now?			
Factual: What makes something a game? Why do we like games?					
Conceptual: How can we apply the principles of gaming to exercise?					
Debatable: Are digital devices making us less healthy? If it's 'good for us' should we just do it ... ? How can we use the principles of game play to make exercise more appealing?					
Approaches to Learning you used in this chapter:	Description – what new skills did you learn?	How well did you master the skills?			
		Novice	Learner	Practitioner	Expert
Communication skills					
Collaboration skills					
Organization skills					
Reflection skills					
Information literacy skills					
Critical-thinking skills					
Creative-thinking skills					
Learner profile attribute(s)	Reflect on the importance of being balanced for your learning in this chapter.				
Balanced					

7

Why did the designer cross the road?

○ Innovative systems can improve how we interact with the world.

CONSIDER THESE QUESTIONS:

Factual:

What is walkability? How do children learn to cross the road safely? What is innovation?

Conceptual:

How can we use innovative design to encourage safer behaviour? Is anything truly innovative anymore?

Debatable:

Should jaywalking be illegal? Who is more responsible for pedestrian safety – drivers or pedestrians?

Now **share** and **compare** your thoughts and ideas with your partner or with the whole class.

KEY WORDS

walkability



■ **Figure 7.1** How can designers improve pedestrian crossings?

○ IN THIS CHAPTER, WE WILL ...

- **find out** about the importance of pedestrian safety
- **explore** innovative, playful ways designers have improved road crossings
- **take action** by designing our own playful solution to encourage safer pedestrian behaviours in our community.



■ These Approaches to Learning (ATL) skills will be useful ...

- Communication skills
- Collaboration skills
- Organization skills
- Reflection skills
- Information literacy skills
- Critical-thinking skills
- Creative-thinking skills

● We will reflect on this learner profile attribute:

● Reflective

We will explore new ideas and innovative strategies. We will take on a challenge in our community and will show resilience and determination when designing a solution.

◆ Assessment opportunities in this chapter:

- ◆ Criterion A: Inquiring and analysing
- ◆ Criterion B: Developing ideas
- ◆ Criterion C: Creating the solution
- ◆ Criterion D: Evaluating

In this chapter you will be focusing on road safety, particularly around pedestrian crossings. You will explore the importance of designing for pedestrians when creating road systems and learn about the dangers pedestrians can face when they don't have suitable, safe crossings available to them. You will look at some examples of how road safety has been taught and examples of innovative ways designers have tried to improve pedestrian crossings.

According to the UN's Global Road Safety Week website, 1.35 million people die on the world's roads each year. Road traffic injuries are the leading killer of children and young adults aged 5–29 years. While many of those may be passengers in cars, there are also many pedestrian injuries and deaths that contribute to this number.

The UN's Global Goals for Sustainable Development also have a focus on increasing road safety. Goal 3.6 is 'Reduce road injuries and deaths'. In this chapter you will consider how design can help us achieve this goal. You will also consider the positive benefits of making a town or city more pedestrian friendly.

THINK–PAIR–SHARE

- When and where do you walk in your community?
- What makes you choose other methods of transportation, like cars, over walking?
- Would you walk more if your community was more pedestrian friendly?

What is walkability?

UN's global road safety performance targets:
www.who.int/violence_injury_prevention/road_traffic/road-safety-targets/en

You might also want to learn more about the UN's Road Safety Week: www.unroadsafetyweek.org



By 2020, halve the number of global deaths and injuries from road traffic accidents

■ **Figure 7.2** UN Global Goal 3.6

Design situation

In this chapter you will **identify** a problem pedestrians face in your area and a suitable solution. You will focus on a particular pedestrian crossing in your community but may **create** a design that could be rolled out across your town/city and beyond. You will **create** a presentation to pitch your design idea to your local council. The presentation will highlight the current situation, potential problems and how your solution will improve the lives of your community members.

ACTIVITY: Why should cities be more pedestrian friendly

■ ATL

- Information literacy skills: Access information to be informed and inform others

Before you focus on the needs of your community, explore the benefits of walkable communities in general.

Write a **list** of all the benefits of making where you live more walkable. You might think about the health, environmental and socio-economic benefits. You might think about ways everyone benefits, but then also think about how particular groups of people or individuals (for example, children) can benefit.

When you have completed your list, visit the following website to see how many of their reasons were on your list:

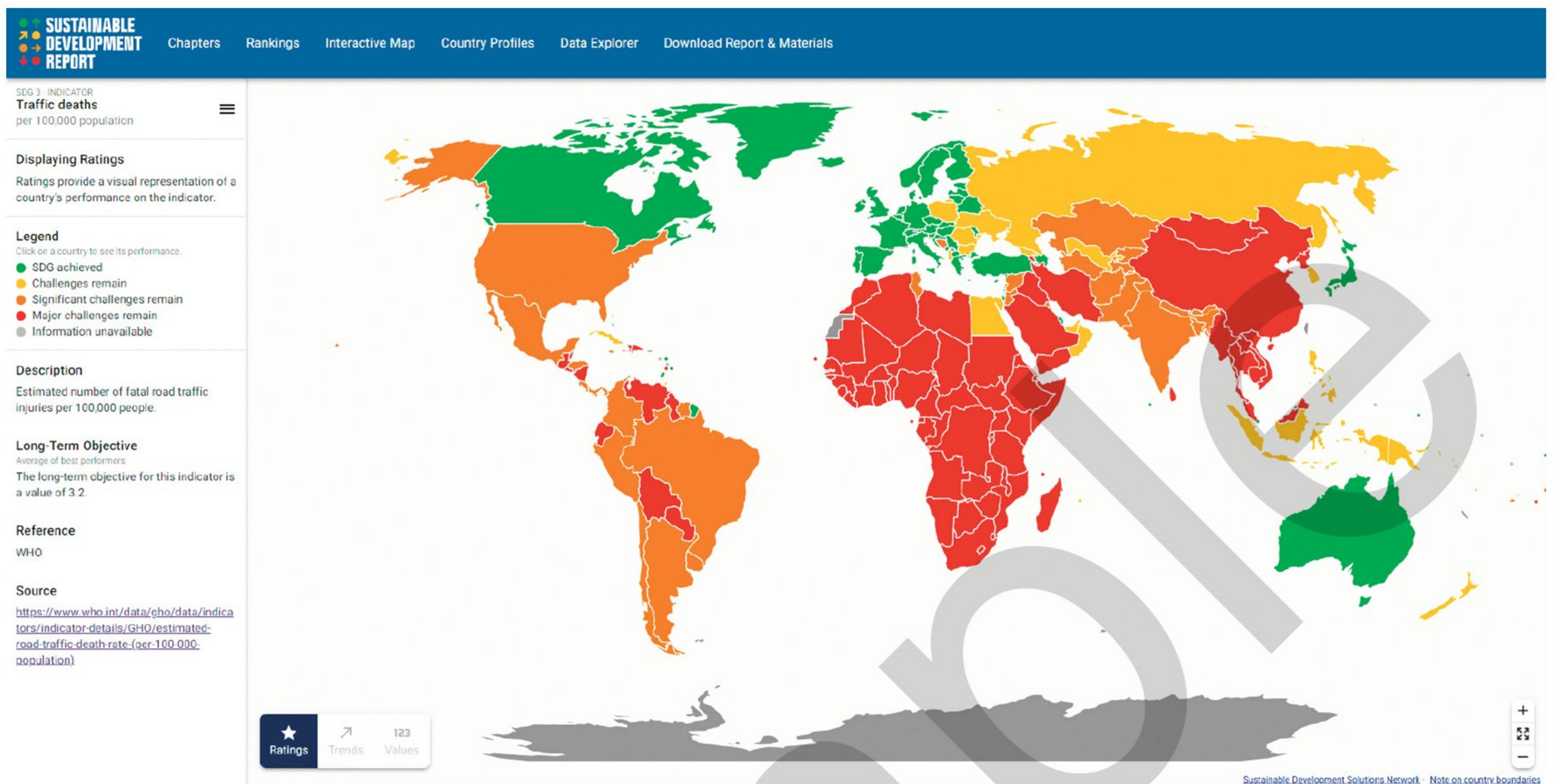
- 50 reasons why everyone should want more walkable streets: www.fastcompany.com/3062989/50-reasons-why-everyone-should-want-more-walkable-streets

Now think about the problems when a community is not pedestrian friendly. Can you gather data to **explain** your answers? The following links might be helpful:

- www.cdc.gov/transportationsafety/pedestrian_safety/index.html
- www.who.int/news-room/fact-sheets/detail/road-traffic-injuries

Now see if you can find some basic information about road safety in your country. In our next activity you will focus more on your immediate community. You may wish to use a UN Global Goals mapping website to help you:

- www.sdgmapping.ch
- www.sdgdashboard.org
- <https://dashboards.sdgindex.org>



■ **Figure 7.3** Sustainable Development Report's interactive map shows traffic deaths per 100 000 population

Summarize the information you have uncovered, making sure you:

- **explain the potential problems faced in non-walkable cities or when pedestrian safety is compromised**
- **justify the need for a solution – explain the benefits of a pedestrian friendly city.**

Make sure you use quotes and properly cite your sources.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A i: Explain and justify the need.

ACTIVITY: Headline

■ ATL

- **Communication skills:**
Paraphrase accurately and concisely

Creating a newspaper-type headline to **summarize** the information you have uncovered is a good way of identifying what is the most important information. This thinking routine is useful not only for organizing your thoughts, but for quickly expressing important ideas to others.

If you were to write a headline for this topic or issue right now that captured the most important aspect that should be remembered, what would that headline be?

How do children learn to cross the road safely?

DISCUSS

As young children, there are many ways we learn about road safety, from learning the phrase 'stop-look-listen' to public safety announcements.

As a child, how did you learn about pedestrian safety?

Learn about the UK government's road safety campaigns by looking at the sites below and watching the animations and videos they have created:

- www.think.gov.uk/about-think/story-of-think
- www.youtube.com/user/thinkuk
- <https://youtu.be/4e7AFLzVjA>



■ **Figure 7.4** Crossing the street

ACTIVITY: Walking audit

■ ATL

- Information literacy skills: Collect and analyse data to identify solutions and make informed decisions

Now it's time to focus on walkability in your community. There are many ways walkability is measured, with the most basic being counting how many people walk in a certain area. There are many apps, websites and organizations that measure walkability, including Walk Score, Walkonomics, RateMyStreet and the Walkability App.

Although these are usually done by counting pedestrians walking on streets, you will be focusing on pedestrians crossing roads. Pick a pedestrian crossing in your community that you want to improve and do a walking **audit** to really understand how it is currently used. You might choose to do an audit of a few different crossings to help you decide which is most in need of your design skills.

You will have to decide the following:

- What day, time and for how long you will conduct your audit.
 - Will you be thinking about the busiest time the pedestrian crossing is used? What will **impact** this, for example, school start times?

- Will you simply count the number of people using the crossing or will you also look at the types of people using it?
 - Will you divide people into groups based on age, or something else?
 - Will you note when people are using bikes, wheelchairs, prams or other devices?
- How will you conduct the survey?
 - Simply counting the number of people crossing? Recording how long they have to wait till they can cross? Asking the people questions about their experience?

You should **identify** which is the most important, which you need to know, information you want to gather and which is less important.

- How to conduct a walk audit in your community:
<https://americawalks.org/how-to-conduct-a-walk-audit-in-your-community-quick-guide-for-assessing-your-neighborhood-walkability>

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A ii: Identify and prioritize the research.

DISCUSS

Jaywalking is when a pedestrian crosses the road ignoring safety rules, such as not waiting for a light to indicate that it is safe or not safe to cross.

In some countries jaywalking is illegal. Can you find out the rules about jaywalking where you live?

Learn how the design of curb cuts has played a significant role in reducing barriers for disabled people: <https://99percentinvisible.org/episode/curb-cuts>



■ **Figure 7.5** How might the height of the button or the bumps on the ground help different types of pedestrians?



■ **Figure 7.6** Where would you expect to see this equestrian-friendly crossing?

DISCUSS

Describe the pedestrian crossing you will focus on to a partner. What does it look like? Are there any signs or buttons there? What markings are on the road? What do they signal to pedestrians and drivers?



■ **Figure 7.7** A pedestrian crossing button in the UK. What is good/bad about the design?



■ **Figure 7.8** A pedestrian crossing in the UK. How does the writing help pedestrians? What and who are the bumps in the ground for?



■ **Figure 7.9** Below these signs are additional signs designed by local children. These signs are usually visible close to schools in the UK. Different boroughs have different signs. Why might these signs have more impact on drivers than a normal '20 Zone' sign?

How can we use innovative design to encourage safer behaviour?

DISCUSS: What is innovation?

The IB's Design Guide defines **innovation** as 'the successful diffusion of an invention into the marketplace' and the invention as 'an entirely novel product or a feature of a product that is unique'.

The Cambridge dictionary defines innovation as '(the use of) a new idea or method'.

How would you **describe** innovation? Can you give examples of innovative products?

Hint

You might think about innovative products in the technology, entertainment or medical field.

ACTIVITY: Meet the designers

■ ATL

- Critical-thinking skills: Practise observing carefully in order to recognize problems

When looking at the examples in the 'Meet the Designer' boxes on the next few pages, consider the problem they are solving:

- Is it stopping people crossing the road too early?
- Is it making drivers more aware there is a crossing coming?
- Is it simply making a boring, mundane task a little more enjoyable?
- Are these designs aimed at pedestrians or drivers?
- Are they aimed at particular people, for example children, or are they more universal?
- Are they a long-term or short-term solution?
- What safety measures do you think had to be taken to install the design?
- Does the design make the road safer or are there potential risks caused by the design?

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A iii: Analyse existing products.

MEET THE DESIGNER

ActiWait

<https://smartcitynews.global/start-up-radar/urban-invention>

Designed by German company Urban Invention, ActiWait is an interactive screen placed at crossings that have long wait times. They allow pedestrians to do everything from playing pong with people waiting on the other side of the street, to finding out about nearby cultural events. ActiWait has education games, local and global news, and can even give waiting people compliments!



■ **Figure 7.10** Providing entertainment and information to people waiting

MEET THE DESIGNER

Stop, Smile and Stroll

www.playablecity.com/projects/stop-smile-stroll



■ **Figure 7.11** Putting a smile on pedestrians

This award-winning design created by Hirsch and Mann design studio aims to put a smile on pedestrians' faces. A screen by the crossing asks the pedestrian, 'How are you feeling today?' It then shows the pedestrian's face and gives them a compliment. You might want to check out their other design, Hello Lamp Post (www.hellolamppost.co.uk).

MEET THE DESIGNER

Shadowing

<https://jonathanchomko.com/Shadowing>



■ **Figure 7.12** Catching people's attention

Shadowing was designed by Jonathan Chomko and Matthew Rosie and records and plays back people's shadows. This means when you are waiting to cross the road, you might notice a shadow, without a person, moving next to you on the ground! People interacted with the installation through dancing and making fun shapes with their shadows. This experience has appeared in the UK, Israel, America and Japan.

MEET THE DESIGNER

WalkBump

www.michaeltobinprince.com/sexy-space/tag/alfredo+adan+roses



■ **Figure 7.13** Inventive pedestrian crossing buttons

WalkBump, designed by Alfredo Adan Roses, is a pedestrian crossing button that is activated by a fist bump.

MEET THE DESIGNER

3D Crossing

www.bilastaedamalun.is/um-okkur.html



■ **Figure 7.14** Creative pedestrian crossings

Street painting company, Vegmálun GÍH, painted this 3-D optical illusion pedestrian crossing in Ísafjörður, Iceland.

MEET THE DESIGNER

'Les Jumeaux' ('The twins')

www.camillewalala.com



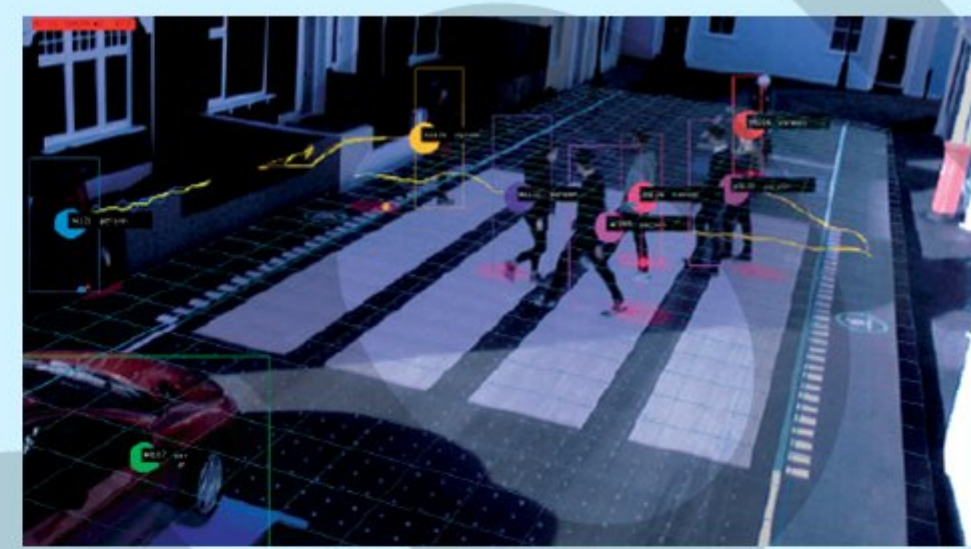
■ **Figure 7.15** Eye-catching pedestrian crossings

Camille Walala paints many street murals, including pedestrian crossings. This playful pedestrian crossing was painted in White City, London, UK.

MEET THE DESIGNER

Starling CV

<https://umbrellium.co.uk/products/starling-cv>



■ **Figure 7.16** Pedestrian crossings transformed by technology

Umbrellium's project is a pedestrian crossing that is only visible when needed. The system can distinguish between pedestrians, cyclists and vehicles, and responds accordingly, focusing on safety.

Is anything truly innovative anymore?

EXTENSION

Other examples to explore:

- Atlanta Rainbow Crosswalks: www.atlasobscura.com/places/atlanta-rainbow-crosswalks
- Beyond the black and white. Exploring five creative crosswalks around the world that make good places: www.linkedin.com/pulse/beyond-black-white-exploring-5-creative-crosswalks-around-nguyen
- Büro North proposes ground-level traffic lights to prevent pedestrian accidents: www.dezeen.com/2016/07/28/movie-buro-north-ground-level-traffic-lights-prevent-pedestrian-accidents-video
- Chinatown Barnes Dance: www.atlasobscura.com/places/chinatown-barnes-dance
- Creative crosswalks: Street art meets safety enhancement: www.smartcitiesdive.com/news/creative-crosswalks-street-art-meets-safety-enhancement/526474
- Droplet traffic light: Social networking in your traffic lights!: <https://bitrebels.com/technology/droplet-traffic-light-social-networking-in-your-traffic-lights>
- Eley Kishimoto covers London street crossings in graphic patterns: www.dezeen.com/2016/09/24/eley-kishimoto-pedestrian-street-crossing-brixton-london-design-festival-2016
- Female pedestrian lights: www.atlasobscura.com/places/vilnius-female-pedestrian-lights
- Fun hopscotch crosswalks unveiled in downtown Baltimore: <https://mymodernmet.com/graham-coreil-allen-hopscotch-crosswalks>
- Graham Project Crosswalks: <https://grahamprojects.com/projects>
- Innovative laser crosswalk concept: www.toxel.com/tech/2009/11/18/innovative-laser-crosswalk-concept
- Interactive dancing traffic lights make waiting more entertaining: www.dezeen.com/2014/09/17/interactive-dancing-traffic-lights-installation-smart-car-lisbon
- London replaces 'green man' signals at Trafalgar Square crossings with LGBT symbols for Pride Festival: www.lonelyplanet.com/articles/london-green-man-signals-lgbt-symbols
- London tests LED crosswalk that responds to real-time conditions: www.smartcitiesdive.com/news/london-tests-led-crosswalk-that-responds-to-real-time-conditions/507274
- North Shore Dance Paving Stones: www.atlasobscura.com/places/north-shore-dance-paving-stones
- Pedestrian crossing in China turns pedestrian footsteps into leaves: www.boredpanda.com/green-pedestrian-crossing-china-turns-pedestrian-footsteps-into-leaves/?utm_source=google&utm_medium=organic&utm_campaign=organic
- The road design tricks that make us drive safer: www.bbc.com/future/article/20140417-road-designs-that-trick-our-minds
- Water-activated street murals come to life when it rains: <https://mymodernmet.com/pantone-project-monsoon>
- WikiCity Bogotá: How citizens can improve road safety conditions: <https://thisbigcity.net/wikicity-bogota-how-citizens-can-improve-road-safety-conditions>

ACTIVITY: Thinking skills – Evaluate and manage risk



■ **Figure 7.17** Examples of different pedestrian crossings, from <https://islandpress.org/books/global-street-design-guide>

Look at the pedestrian crossings above and answer the following questions:

- Do you think they are designed for somewhere with high, medium or low pedestrian volumes?
- Should these have traffic signals (lights) or not?
- Are they designed for areas where drivers are going any speed, below 30 km/h or above 30 km/h?
- Are they designed for somewhere with low, high or medium vehicle volumes?

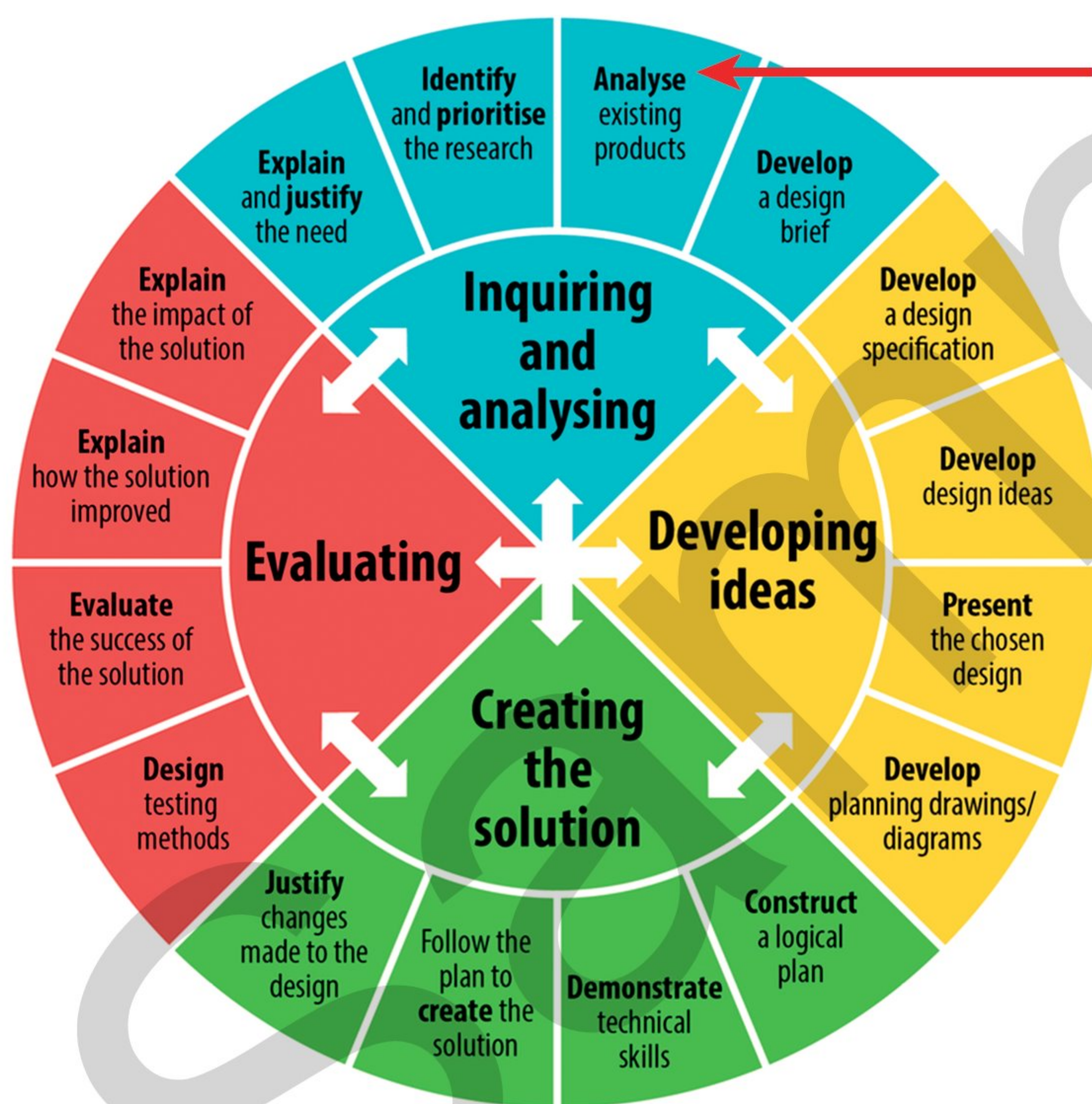
Once you have answered these questions, share your thoughts with a classmate and **explain** your answers. You can then check out the Global Design Cities Initiative website to see if you were right and to find out more.

Which image best describes the crossing you want to design for? How will your new knowledge help your design?

Global Design Cities Initiative: <https://globaldesigningcities.org/publication/global-street-design-guide/designing-streets-people/designing-for-pedestrians/pedestrian-crossings/crossing-types>

How can we use innovative design to encourage safer behaviour?

DISCUSS: Standing on the shoulders of giants



■ **Figure 7.18** MYP design cycle

In MYP Design we always **analyse** existing products before designing our own solutions. This is not only something that happens in the MYP classroom, but something that all designers do. Taking inspiration from other products is a natural part of designing. As shown earlier in the chapter, innovation is linked to a completely new or novel idea or product.

That being said, discuss the following with a partner then share your thoughts with the class:

‘Is anything truly innovative anymore?’

SMALL BUDGET – BIG IMPACT

Many of the examples shown are not feasible for an MYP Design student to complete, although they could still provide some inspiration for you to **create** something small with a big impact. Here are some ideas to get you started:

- Chalk drawings on the pavement with activities/games to play while you wait to cross.
- Pavement murals created using stencils and water-repellent spray that only show when it rains.
- Posters on the posts at pedestrian crossings.
- Knitting yarn around the posts at pedestrian crossings (sometimes called ‘yarn bombing’).

REAL OR MOCK-UP?

You might be able to **create** real-life versions of some of your solutions. You could get permission from your local council to actually **create** some small-scale projects, such as painting the ground. Other ideas may be difficult to produce because of safety and legality. If this is the case, you should plan to **create** a **mock-up**. This could be a small-scale model, a simulated crossing on your school grounds or a digital mock-up.

DISCUSS

Should the designs focus on changing the behaviour of the pedestrians or drivers? Why?

ACTIVITY: Mind-map

■ ATL

- Creative-thinking skills: Use brainstorming and visual diagrams to generate new ideas and inquiries



■ **Figure 7.19** Start your mind-map by adding categories, then use these to brainstorm around. Draw connecting lines between ideas if needed

To get initial ideas it might be useful to **create** a mind-map. To get you started, break down the different existing products you **analysed** into different categories. Add these to your mind-map. Remember that we use existing products to inspire our solutions, so this will help you generate new ideas. **Create** categories such as the placement of ideas (for example, on the pavement), the target audience (for example, children crossing), the type of product (for example, digital) or the length of the product (for example, a short-term solution).

Once you have these categories laid out on your mind-map, you can start adding your own ideas. Draw connecting lines between ideas. Alternatively, you could make your mind-map on sticky notes or on a digital tool such as Jamboard or Lucidchart. These digital tools allow you to move ideas around and group notes together.

If you still haven't identified a project you want to develop, show your mind-map to a classmate or teacher and ask them to give you **feedback** and to help you add ideas.

For more brainstorming ideas, download this free e-book, '25 useful brainstorming techniques':

<https://personalexcellence.co/blog/brainstorming-techniques>

Brainstorming Done Right!

www.youtube.com/watch?v=9K8W4ooygUU

IDEO Brainstorming

www.ideo.com/pages/brainstorming

The following two resources might help you develop your ideas:

<https://globaldesigningcities.org/publication/global-street-design-guide/designing-streets-people/designing-for-pedestrians/pedestrian-crossings/crossing-types>

and

www.trafficsafetystore.com/blog/3-ways-to-improve-crosswalks-in-your-neighborhood

ACTIVITY: Design brief



■ ATL

- Communication skills: Paraphrase accurately and concisely

Now that you know what you will make, it is time to write your design **brief**. Use the following prompts and answer each with no more than one sentence:

- **WHAT:** Describe your product, including what it will be made of and what it will do.
- **WHY:** Use a quote from your initial research that highlights the problem you are solving.
- **HOW:** Describe how you will make your solution.
- **WHERE:** Describe the location you selected and why.
- **WHO:** Describe who your product is aimed at.
- **WHEN:** Describe when the product will be ready.

+

- **INNOVATION:** Describe what makes your product special.
- **IMPACT:** Describe the impact your product will have.

If you are going to create a mock-up, you should also mention this.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A iv: Develop a design brief.

ACTIVITY: Specifications



■ ATL

■ Communication skills: Organize and depict information logically

Use the following table to help you lay out your **specifications**. It is important to do this logically. This is because you need to refer to them when designing, creating and evaluating your product.

Aesthetics	What will your product look like (style, colour, pattern, etc.)?
Cost	What is the maximum your product will cost to make?
Customer	Who is the target audience? How will it be made for that target audience?
Environmental considerations	Where will your product be used? How will your product be adapted for that environment?
Function	What will your product do? What problem will it solve and how?
Materials	What materials do you need to make the product?
Safety	How will you be safe when making/installing the product? How will the product be safe when it is being used?
Size	What is the size of your product (you can mention minimum, maximum or the exact size, depending on the project)?

■ **Table 7.1** Useful terms when laying out your specifications

ACTIVITY: Developing ideas

■ ATL

■ Creative-thinking skills: Use brainstorming and visual diagrams to generate new ideas and inquiries

If you want to have good ideas you must have many ideas. Most of them will be wrong, and what you have to learn is which ones to throw away.

(Linus Pauling)

For this activity you will continue to use a mind-map to generate ideas. You will use your design brief and specifications as a start but you should also think about all the possible variations on your original idea.

For this mind-map, draw out your ideas instead of writing words. You may add one or two words as annotations to **explain** your drawings.

Do not worry about being neat or accurate. Sketch out as many ideas as you can. Use only one colour for these initial ideas. You may choose to work on a larger piece of paper, the classroom whiteboard or on a flipchart.

◆ Assessment opportunities

◆ This activity can be assessed using Criterion B i: Develop design ideas.

ACTIVITY: Which idea will you develop?

■ ATL

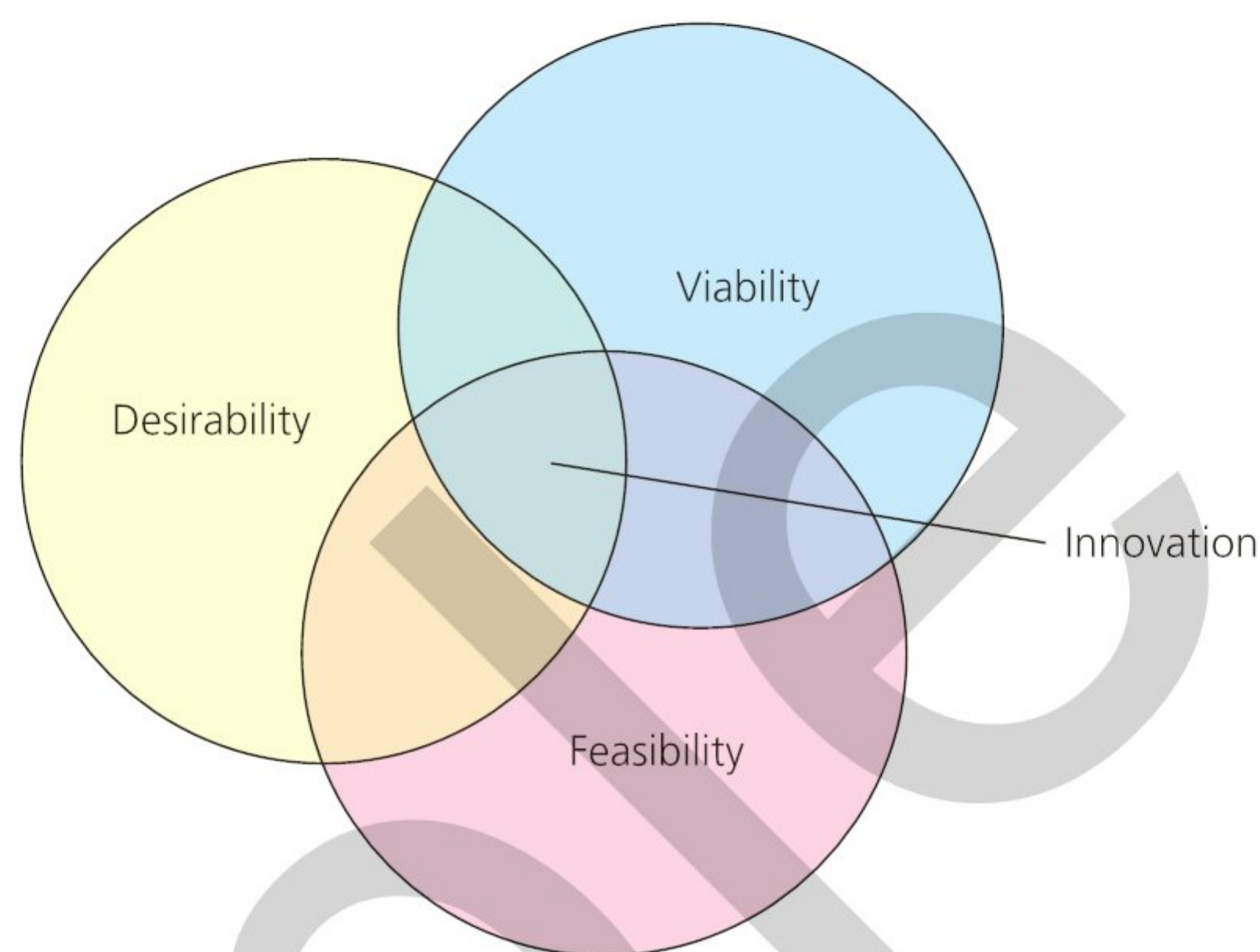
- Communication skills: Give and receive meaningful feedback

Once you have finished your mind-map, give your classmates a different colour pen. Ask them to add improvements/suggestions and write comments. You may also get them to note down which ideas they like best. Use their feedback when selecting which idea(s) to **develop** further. You should also show how the idea you want to **develop** fits your criteria.

Lastly, **describe** how and why the idea is innovative. Tim Brown, CEO of design firm IDEO, says that innovation exists when something is desirable, feasible and viable (Figure 7.20). You might want to do this by describing how your product is desirable (enjoyed by the target audience), viable (how likely it is to successfully solve your problem) and feasible (how realistic it is to **create**/install your product). The feedback you have gathered from your classmates might focus just on the 'desirability', but you should make sure you also explain why your chosen idea is viable and feasible.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B iii: Present and justify the chosen design.



■ **Figure 7.20** Innovation diagram, by IDEO's Tim Brown

ACTIVITY: Visualization

■ ATL

- Communication skills: Organize and depict information logically

Before creating your product, it is important to **create** detailed and accurate drawings of what you will make. These should be to scale and should have annotations so others can understand them easily. For this project, you should also show how the product will look on site.

You might wish to overlay your idea to a photograph of the pedestrian crossing or draw the crossing yourself with your design added. This is called a 'visualization' or showing the product 'in-situ'. This is an important skill for designers to have. It can help your **client** visualize a product before it is made. It can also help make sure the product best suits the location and can allow them to make any adjustments before creating the final product.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B iv: Develop planning sketches.

ACTIVITY: Creating a plan

■ ATL

■ Organization skills: Plan short- and long-term assignments; meet deadlines

Sometimes doing ‘backward planning’ can be useful in making a step-by-step plan. This is where you think about your final goal first. Then you think about the steps you need to take to reach it. Make sure you add in safety information for any steps where it is relevant.

Use the following template to **create** your logical plan.

LONG-TERM GOAL	
GOAL	By [final deadline] I will have created a [product] that will [function and problem you are solving].
SHORT-TERM GOALS	
Lesson One	By the end of my lesson on [date] I will have [steps complete]. To do this I will [describe process, materials and tools].
Lesson Two	By the end of my lesson on [date] I will have [steps complete]. To do this I will [describe process, materials and tools].
Lesson Three	By the end of my lesson on [date] I will have [steps complete]. To do this I will [describe process, materials and tools].
ADAPTING	
If I fall behind on any step I will:	
<ul style="list-style-type: none">• come to the design room outside of class time to catch up• catch up in my next class• catch up at home.	

■ **Table 7.2** Planning your goals and contingency steps

Add additional rows for the number of steps/lessons you have.

◆ Assessment opportunities

◆ This activity can be assessed using Criterion C i: Construct a logical plan.

ACTIVITY: Creating your solution

■ ATL

- Reflection skills: Keep a journal to record reflections

Now it's time to document the production process (whether it is a complete product at a pedestrian crossing or a mock-up).

Often when we document the process of creating our product, we do it alongside our table by adding an additional column. For this project you can document your work in diary form. Write the title of each lesson, along with the date (for example 'Lesson Three: 31 May').

Underneath the title write a short paragraph describing what you did during that lesson, along with any changes. Make sure you add photographs or screenshots to every entry. If needed, annotate your photographs/screenshots to better **describe** what you did.

You might want to use some of the following sentence starters to help you reflect:

- A new skill I developed today was ...
- A new technique I tried today was ...
- A challenge I overcame today was ...
- I adapted the plan today by ...
- I made sure I was safe today by ...
- The resources I used today were ...
- A change I made to my plan today was ...
- Today I felt ...
- Today ... helped me by ...

It is best to record your process as you go, instead of trying to document it at the end of the project. This means everything will be fresh in your mind and you will have an accurate, authentic reflection of the experience. This also means you are unlikely to forget any steps you took.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion C ii: Demonstrate technical skills.

ACTIVITY: My innovative solution

■ ATL

- Creative-thinking skills: Create novel solutions to authentic problems

Take photographs/screenshots of your finished product. If possible, show the product in-situ. You may even want to show your target audience interacting with the product. Add annotations to show exactly what makes your product novel or innovative, and how it is solving the problem you identified.

If you are doing a mock-up or simulation, you might consider superimposing your design on to a photograph of the pedestrian crossing you were designing for. You can also show your finished solution alongside your visualization (detailed sketch). Here you can add annotations to **explain** any changes made from your sketch to your finished product.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion C iii: Follow the plan to create a solution and C iv: Justify changes made to the plan.

ACTIVITY: Pitch–Praise–Ponder–Push protocol

■ ATL

■ Communication skills: Give and receive meaningful feedback

A protocol for giving and receiving meaningful feedback follows the four Ps. Using a structured protocol for getting feedback is better than just asking for open feedback, as it gives people a better idea of the sort of information you are looking for. It also makes you sure you receive a balance of positive feedback and suggestions for improvement. Try using this protocol with at least three classmates. Document their feedback as you might want to use it later when explaining any changes you might make.

- **Pitch:** Spend one minute explaining your final product to your classmate.
- **Praise:** Ask them to describe what they like about your product.
- **Ponder:** Ask them what questions they have.
- **Push:** Ask them to make suggestions for pushing your solution forward.

ACTIVITY: Testing your solution

■ ATL

■ Information literacy skills: Process data and report results

User/Field trial:

To test your final product, you might consider using a similar method to your walking audit. This means you can compare the pedestrian crossing use before and after you introduced your product.

Try to keep consistency and have minimal variables (just as you would with an experiment in science class). This means, if you did your walking audit at 9 am–9.30 am on a Tuesday, during term-time, on a sunny day, then your **testing** should be conducted at 9 am–9.30 am on a Tuesday, during term-time, on a sunny day as well.

Apart from observing drivers, pedestrians, cyclists and others interacting with the pedestrian crossing, decide how else you will gather feedback data. Maybe you will ask people to complete a survey after crossing, maybe you will have a box for them to add a comment, maybe you will ask them a single question.

Expert appraisal:

Consider which experts you could use to gather feedback from. You might ask a design teacher or contact the local council to ask someone who works in city planning. You might even ask for feedback from a crossing guard. When gathering feedback from them, ask them specific questions. You could even use the Pitch–Praise–Ponder–Push protocol.

Use the data gathered to **explain** the success of your solution in relation to the problem you were trying to solve. Use the ‘Push’ feedback you have gathered to also show how your solution could be improved, as well as where you were successful.

Make sure you refer to your specifications, describing which were successful and which you could improve. When looking at your specifications, you could mark off each one as ‘complete’ or ‘incomplete’ or you might decide to give it a rating (for example, out of five).

Use the data gathered to reflect on the success and to **explain** how you could improve your product.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion D i: Develop testing methods and D ii: Evaluate the success of the solution.

ACTIVITY: Impact

■ ATL

- Information literacy skills: Access information to be informed and inform others

Use the following prompts to help you **explain** the impact of your solution:

- The problem I was trying to solve was:
- I solved the problem by:
- I can prove this because:
- If my product was more widely used the impact could be:

Use information gathered from your tests to support your answers.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion D iv: Explain the impact of the solution.

EXTENSION

You might want to think about other parts of the transportation system in your town/city that you could improve. This could range from improving public transportation to making better systems to support e-vehicles.

! Take action

- ! Consider how else you might make pedestrians in your school safer. You could deliver a presentation to a primary school class or assembly. You could also invite a local expert in to do a road safety talk. Perhaps consider starting a volunteer group, where student greeters help younger students cross the road. You might consider an awareness campaign that could be delivered through posters, newsletters, emails, video bulletins or other methods.
- ! Consider organizing a school event for the UN's Road Safety Week or take a look at the UN's road safety website for other ways to get involved and take action: www.unroadsafetyweek.org/en/get-involved
- ! You could also share your innovative solution with the UK government organization in charge of road safety by tagging them on Twitter using @THINKgovuk

Reflection

In this chapter you found out about the importance of pedestrian safety. You explored innovative, playful ways designers have improved road crossings. Then you took action by designing your own playful solutions to encourage safer pedestrian behaviours in your community.

Use this table to reflect on your own learning in this chapter.					
Questions we asked	Answers we found	Any further questions now?			
Factual: What is walkability? How do children learn to cross the road safely? What is innovation?					
Conceptual: How can we use innovative design to encourage safer behaviour? Is anything truly innovative anymore?					
Debatable: Should jaywalking be illegal? Who is more responsible for pedestrian safety – drivers or pedestrians?					
Approaches to Learning you used in this chapter:	Description – what new skills did you learn?	How well did you master the skills?			
		Novice	Learner	Practitioner	Expert
Communication skills					
Collaboration skills					
Organization skills					
Reflection skills					
Information literacy skills					
Critical-thinking skills					
Creative-thinking skills					
Learner profile attribute(s)	Reflect on the importance of being reflective for your learning in this chapter.				
Reflective					

8

How can toilets change lives?

- We can design and create **resources** that make big **changes** towards **equality** and **inclusion**.

CONSIDER THESE QUESTIONS:

Factual:

How many people in the world have access to a toilet? How can having access to a toilet impact your physical and/or mental health? What are the main reasons some people don't have access to toilets?

Conceptual:

How might having access to a toilet positively impact other parts of someone's life?

Debatable:

'Toilets First, Temples Later' (Narendra Modi)? If everyone in the world had access to a toilet, would we be much closer to global equality?

Now **share** and **compare** your thoughts and ideas with your partner or with the whole class.



■ **Figure 8.1** How many people in the world have access to a toilet?

○ IN THIS CHAPTER, WE WILL ...

- **find out** about the importance of having access to a toilet
- **explore** how designers are bringing toilets to more people
- **take action** by designing our own toilets or taking part in an awareness or educational campaign.

■ These Approaches to Learning (ATL) skills will be useful ...

- | | |
|------------------------|-------------------------------|
| ■ Communication skills | ■ Information literacy skills |
| ■ Collaboration skills | ■ Critical-thinking skills |
| ■ Organization skills | ■ Creative-thinking skills |
| ■ Reflection skills | |



● We will reflect on this learner profile attribute:

● Open-minded

We will be considering other people's experiences and points of view in this chapter. Thinking about going to the toilet can be uncomfortable, embarrassing or feel silly, so we will be open-minded when approaching this topic.

◆ Assessment opportunities in this chapter:

- ◆ **Criterion A:** Inquiring and analysing
- ◆ **Criterion B:** Developing ideas
- ◆ **Criterion C:** Creating the solution
- ◆ **Criterion D:** Evaluating

KEY WORDS

sanitation

defecation

▼ Links to: Individuals and societies; Science

You might use your knowledge about different countries from Individuals and societies or about water filtration from Science classes to help with this chapter.

THINK-PAIR-SHARE

You'll learn more about the problems that come with no access to safe, clean toilets in this chapter, but before we begin, consider the following question:

'How much would your life change if you didn't have easy access to a safe, clean toilet?'

Around a third of the world's population do not have access to a toilet. The consequences of this directly impacts people's health and costs many lives every year. In this chapter you will explore these health consequences, along with the wider effect, which impacts everything from women's safety through to education. You will find out about the global focus on bringing toilets to more people as well as what charities, organizations and designers are doing to support this.

How many people in the world have access to a toilet?

EXTENSION: LEARN MORE

Nearly a billion people still defecate outdoors. Here's why:

www.nationalgeographic.com/magazine/2017/08/toilet-defecate-outdoors-stunting-sanitation

GLOBAL GOAL 6 – CLEAN WATER AND SANITATION



**END OPEN DEFECTION
AND PROVIDE ACCESS
TO SANITATION AND
HYGIENE**

By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations.

■ Figure 8.2 The UN's 6th Global Goal

The UN's 6th Global Goal focuses on clean water and sanitation, with Target 6.2 being to end open defecation and provide access to sanitation and hygiene.

Facts that they highlight that show the importance of this goal include:

- 'Each day, nearly 1000 children die due to preventable water and sanitation-related diarrheal diseases.'
- '2.4 billion people lack access to basic sanitation services, such as toilets or latrines.'
- 'At least 892 million people continue to practise open defecation.'

The UN Secretary-General António Guterres said:

'Today, Sustainable Development Goal 6 is badly off track. This is hindering progress on the 2030 Agenda, the realization of human rights and the achievement of peace and security around the world.'

(António Guterres)

WORLD TOILET DAY

World Toilet Day, observed on 19 November each year, is a UN international observation day that focuses on the global sanitation crisis. The day exists to inform and engage people in the 6th Global Goal. Every year the UN releases different material for this day, including posters, toolkits, animations and more. Take a look online to find out what resources are available for this year's World Toilet Day.



■ **Figure 8.3** A poster for World Toilet Day

- www.globalgoals.org/6-clean-water-and-sanitation
- <https://sdgs.un.org/goals/goal6>
- www.un.org/en/observances/toilet-day
- www.un.org/sustainabledevelopment/water-and-sanitation
- www.worldtoiletday.info
- <https://youtu.be/EPKa8A8Pm3U>
- https://youtu.be/otsbGfSW_cc
- <https://youtu.be/X-5RbKlTe60>

GATES FOUNDATION

Business owner, software developer, philanthropist and founder of Microsoft, Bill Gates (through the Gates Foundation), has recently been focusing on the importance of toilets. The foundation has a wide reach, with one of the focuses being on global health. This has included everything from fighting Aids and malaria to providing greater access to contraception for women in developing countries.

In 2011 they launched the 'Reinvent the Toilet Challenge'. Many innovative solutions emerged from this. Large cash prizes were awarded to entrants, with the first, second and third prizes being \$100 000, \$60 000 and \$40 000.

WATCH

Bill Gates talks toilets: <https://youtu.be/82pmo53FQIY>

EXTENSION

You may wish to do some further research by investigating the following links:

- www.gatesfoundation.org
- https://docs.gatesfoundation.org/Documents/Fact_Sheet_Reinvent_the_Toilet_Challenge.pdf
- www.gatesfoundation.org/what-we-do/global-growth-and-opportunity/water-sanitation-and-hygiene/reinvent-the-toilet-challenge-and-expo
- www.gatesnotes.com/development/sanitation-showcase
- www.wired.com/2012/08/gates-foundation-funds-better-toilet-design



■ **Figure 8.4** When introducing toilets to a place that previously didn't have any, there is an extra step that needs to be taken, which is to encourage people to use them



■ **Figure 8.5** 'Clean India mission – One step towards the cleaner India' appears everywhere from murals in small towns, through to the Indian two thousand rupee note

SWACHH BHARAT MISSION

Narendra Modi famously said '[build] toilets first, temples later' during his campaign trail before he was elected as the Prime Minister of India. He followed through on this vision when elected by introducing the Swachh Bharat Mission.

This is a campaign initiated in 2014 by the Indian government, focusing on ending open defecation, as well as keeping India clean through ending public dumping/littering. They raise awareness and encourage behavioural change.

Part of the campaign has volunteers who work with villages and small communities as 'Ambassadors of cleanliness'. The government also funded construction of toilets as well as campaigns delivered through videos, murals and more. They were also able to get many notable Indian people, including actors, cricketers and politicians involved.

In 2017, the film *Toilet: Ek Prem Katha* was released to much commercial success. This film stars famous Bollywood stars Akshay Kumar and Neeraj Pandey and is a comedy about supporting the Swachh Bharat Mission. There is even an annual Swachh Bharat Short Film Festival which showcases a range of videos from animations to live action.

WATCH

- **Benefits of SBM – Swachh Bharat Mission:** <https://youtu.be/U-eKMF-b1C0>
- **Children – short film in support of Swachh Bharat Mission:** https://youtu.be/aD_tVANUqb4
- **Swachh Bharat: India's Sanitation Revolution:** <https://youtu.be/E7wHfMiMu-Y>
- **Swachh Bharat Song:** <https://youtu.be/Hde8pZXDN1I>

EXTENSION

You may wish to do some further research by investigating the following links.

- Clean India Mission shows that flexibility is key to even poo healthy: <https://qz.com/india/1718798/why-narendra-modis-swachh-bharat-mission-is-working-in-india>
- How the Swachh Bharat mission has saved India's kids: www.hindustantimes.com/india-news/how-the-swachh-bharat-mission-has-saved-india-s-kids/story-G1AjRvhTTTBrv6OUMYq2f0.html
- Modi's Swachh Bharat Abhiyan: Use of toilets to be checked by iPads: www.indiatoday.in/swachh-bharat-abhiyan/story/modi-swachh-bharat-abhiyan-toilets-ipads-mobile-phones-233692-2015-01-01
- Swachh Bharat Abhiyan: What are the barriers for toilet construction: www.downtoearth.org.in/blog/waste/swachh-bharat-abhiyan-what-are-the-barriers-for-toilet-construction-66656
- Swachh Bharat: Bollywood celebrities support PM Narendra Modi's stand: <https://timesofindia.indiatimes.com/entertainment/hindi/bollywood/photo-features/swachh-bharat-bollywood-celebrities-support-pm-narendra-modis-stand/photos-ihana-dhillon-joins-the-swachh-bharat-clean-up-drive-in-mumbai/photostory/66414133.cms?>
- Swachh Bharat Mission: <https://swachhbharatmission.gov.in>
- Toilets first, temples later: Modi's promising act: <https://foreignpolicy.com/2015/02/27/toilets-first-temples-later-modis-promising-act>

What are the main reasons some people don't have access to toilets?

WORD-PHRASE-SENTENCE

So far this chapter has shared links to lots of relevant articles that will help you dig deeper into the topic of toilets. A useful thinking routine to draw out the most important pieces of information from articles you read is 'word, phrase, sentence'. Read an article and pick out the following:

- **A word** that captured your attention or struck you as powerful.
- **A phrase** that moved, engaged or provoked you.
- **A sentence** that was meaningful to you, that you felt captured the core idea of the text.

If you have read an article that your classmates have not read, you can share your word, phrase and sentence to help you **summarize** what you learnt. If you have read the same article as a classmate, you can share what words, phrases and sentences you chose and can look for similarities.

DISCUSS

With a partner or small group, reflect on what you have read so far, then reflect on the following questions:

- **Why do you think so many people do not have access to a toilet?**
- **Why do you think people that do have access to a toilet still choose to defecate outdoors?**

Make sure you practise being open-minded during your discussion. You'll unpack this question more later in the chapter, but make sure to note your original thoughts.

THINK-PAIR-SHARE



■ **Figure 8.6** High-tech toilet

You may have heard about toilets with heated seats, those that play music as you go and toilets with incredible views. Imagine your dream toilet.

Describe it in detail to a classmate then share your answers with the class.

Design situation

The UN has decided to award grants to individuals and groups who create a design that helps us reach Global Goal 6, Target 6.2. The solution could be a design for a toilet, a campaign to raise awareness of the goal and fundraise for related charities and organizations, or an educational campaign to encourage people to use toilets instead of defecating outdoors. Whatever solution you choose, it must be branded with Global Goal 6's logo and colours.

Your final product might be a toilet, **CAD** toilet design, toilet **prototype**, animation, video, app, website, game or other.

EXTENSION

The following articles might inspire you:

- Flying cars and iToilets: Welcome to the future: <https://theday.co.uk/stories/flying-cars-and-itoilets-welcome-to-the-future>
- This \$7000 smart toilet has built-in speakers, mood lighting and Amazon Alexa voice controls: www.cnbc.com/2019/01/08/kohlers-7000-numi-2point0-toilet-with-amazon-alexa-built-in.html
- Toilet makers flush the old turds for new tech in 2020: <https://venturebeat.com/2020/01/14/toilet-makers-flush-the-old-turds-for-new-tech-in-2020>

ACTIVITY: Defining the problem

■ ATL

■ Information literacy skills: Access information to be informed and inform others

You have already briefly dipped into some toilet-related problems, but it is time for you to dig deeper. Find quotes from reliable sources that **explain** exactly why lack of access to toilets is a problem. Remember to link this to the type of solution you are planning to make. This could be a design for a toilet, a campaign to raise awareness of the goal and fundraise for related charities and organizations, or an educational campaign to encourage people to use toilets instead of defecating outdoors.

It is useful to get more specific here by focusing on a particular audience ('person and place'), children in rural India for example.

Many of the articles and videos shared already will be full of information you can use for this activity. You might also want to look for your own articles and

videos. Another useful source for finding key facts are the websites of charities and other organizations that are already focusing on the topic. Those websites will likely have key facts shown prominently to grab people's attention.

Inquiry questions

For this activity, try to include answers to the factual and conceptual inquiry questions:

- How many people in the world have access to a toilet?
- How can having access to a toilet impact your physical and/or mental health?
- What are the main reasons some people don't have access to toilets?
- How might having access to a toilet positively impact other parts of someone's life?

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A i: Explain and justify the need.

EXTENSION

Some more places to explore:

- www.buzzfeednews.com/article/rosebuchanan/this-is-what-its-like-to-be-on-your-period-in-an
- www.globalcitizen.org/en/content/why-water-matters/?linkId=28009722&utm_content=buffer6b7ae&utm_medium=social&utm_source=pinterest.com&utm_campaign=buffer
- <https://listenwise.com/lessons/563-the-toilet-cartel>
- www.nationalgeographic.com/photography/article/sanitation-open-defecation-india-vietnam-haiti-toilets
- www.one.org/us/?topic=water-and-sanitation
- <http://sanitationfirst.org>
- www.toilettwinning.org
- www.unicef.org/stories/state-worlds-sanitation
- <https://water.org>
- www.wateraid.org/stories/toilets-save-lives
- www.worldtoilet.org
- <https://youtu.be/h65tG02tojQ>

ACTIVITY: Research skills

■ ATL

- Information literacy skills: Access information to be informed and inform others

Oxfam’s resource ‘Creating Killer Facts and Graphics’ divides facts into the following categories:

Type
Big number: The single statistic showing the size of the problem
Juxtaposition to highlight injustice and double standards
Absurdity , which can make a juxtaposition much more memorable
Surprising stats
Humanizing abstract issues
Human scale: Statistics can be incomprehensibly big. Re-scale them to a size we can relate to

■ Table 8.1 Categorizing facts

When gathering information about toilets, see if you can gather at least one of each of those types of facts.

Oxfam also states that sometimes:

‘Graphs can speak louder than words, as can infographics. They can illustrate the contrasts of killer facts but in addition show sudden changes in long-term trends, e.g. food prices, and show projections into the future.’

	Example (not necessarily real or up to date)
	<ul style="list-style-type: none"> • Armed conflict costs Africa \$18 billion a year • A Eurozone breakup could cost the poorest countries \$30 billion in lost trade and foreign investment • 21 000 children die every day from preventable causes • Remittances from overseas workers to developing countries are worth \$372 billion a year, three times the global aid budget
	<ul style="list-style-type: none"> • It would cost \$66 billion to get everyone on the planet out of extreme poverty – 4 per cent of global military spending (From <i>Poverty to Power</i>) • A woman's risk of dying from pregnancy-related causes ranges from 1 in 18 in Nigeria to 1 in 8700 in Canada (From <i>Poverty to Power</i>)
	<ul style="list-style-type: none"> • It is easier to trade in guns than bananas ... bananas are subject to more regulations under EC rules than sales of AK47s • Every EU cow receives over \$2 per day in support and subsidies, more than the daily income of half the world's people
	<ul style="list-style-type: none"> • More people die from road traffic accidents in developing countries than die of malaria, HIV and TB • Mexico is the second most obese country after the US
	<ul style="list-style-type: none"> • 12 million more children will go hungry by 2050 because of climate change
	<ul style="list-style-type: none"> • A child dies every 4 seconds from preventable causes • UK aid spending per person per day is less than the price of a cup of tea • There are nearly two bullets for every person on the planet

Source: Oxfam: Creating Killer Facts and Graphics

When explaining a problem you want to solve in design, consider putting the key facts and figures from your research into an infographic to help illustrate your argument.

DISCUSS

Look back at your ‘Defining the Problem’ activity. What type of facts did you use? What type of facts could you add to make this have more impact? Use the ‘Creating Killer Facts and Graphics’ to give you ideas.

EXTENSION

The following websites can be used for creating infographics:

- www.canva.com
- <https://infogram.com>
- <https://piktochart.com>
- <https://spark.adobe.com/make/infographic-maker>

How can having access to a toilet impact your physical and/or mental health?

READ AND DISCUSS

Read the following article and **describe** how you think Mbete felt before the introduction of toilets to her school and after. Use first-person narration for your answer.

Article – What a toilet means to 16-year-old Mbete: www.one.org/us/blog/what-a-toilet-means-to-16-year-old-mbete/?hootPostID=7c8edd4830a8acb5219465edb8e6cc49&utm_content=buffer3a47a&utm_medium=social&utm_source=pinterest.com&utm_campaign=buffer

Describing the perspective of those you might impact with your designs is always useful when explaining why you want to solve the problem you have identified.

ACTIVITY: What else do you need to know?

■ ATL

■ Information literacy skills: Collect and analyse data to identify solutions and make informed decisions

You’ve now **defined** the problem and explained why it needs to be solved. What else do you need to know to design your solution? For the initial research you may have read articles, watched videos and done other types of research where you look at a source and pull out information. This can be useful but can sometimes leave gaps in your knowledge. It’s important to not just pull information from sources but to **define** what you want to know before you begin. This is why writing research questions is an important skill.

For this activity, write 10 to 15 questions. The answers will help you with your design and provide more details about the context you are designing for.

Use the following template research table to help you:

My research question is ...	The answer is relevant to the development of a solution because ...	The question’s priority (high/medium/low) is ...	I found the answer from ...	The answer is ...

■ **Table 8.2** Example of a research table you can follow

Fill in the first three columns completely before you begin. Fill in the last two columns as you find the answers.

◆ Assessment opportunities

◆ This activity can be assessed using Criterion A ii: Identify and prioritize the research.

MEET THE DESIGNER

LooWatt

www.loowatt.com

<https://youtu.be/Xyyh85916RA>



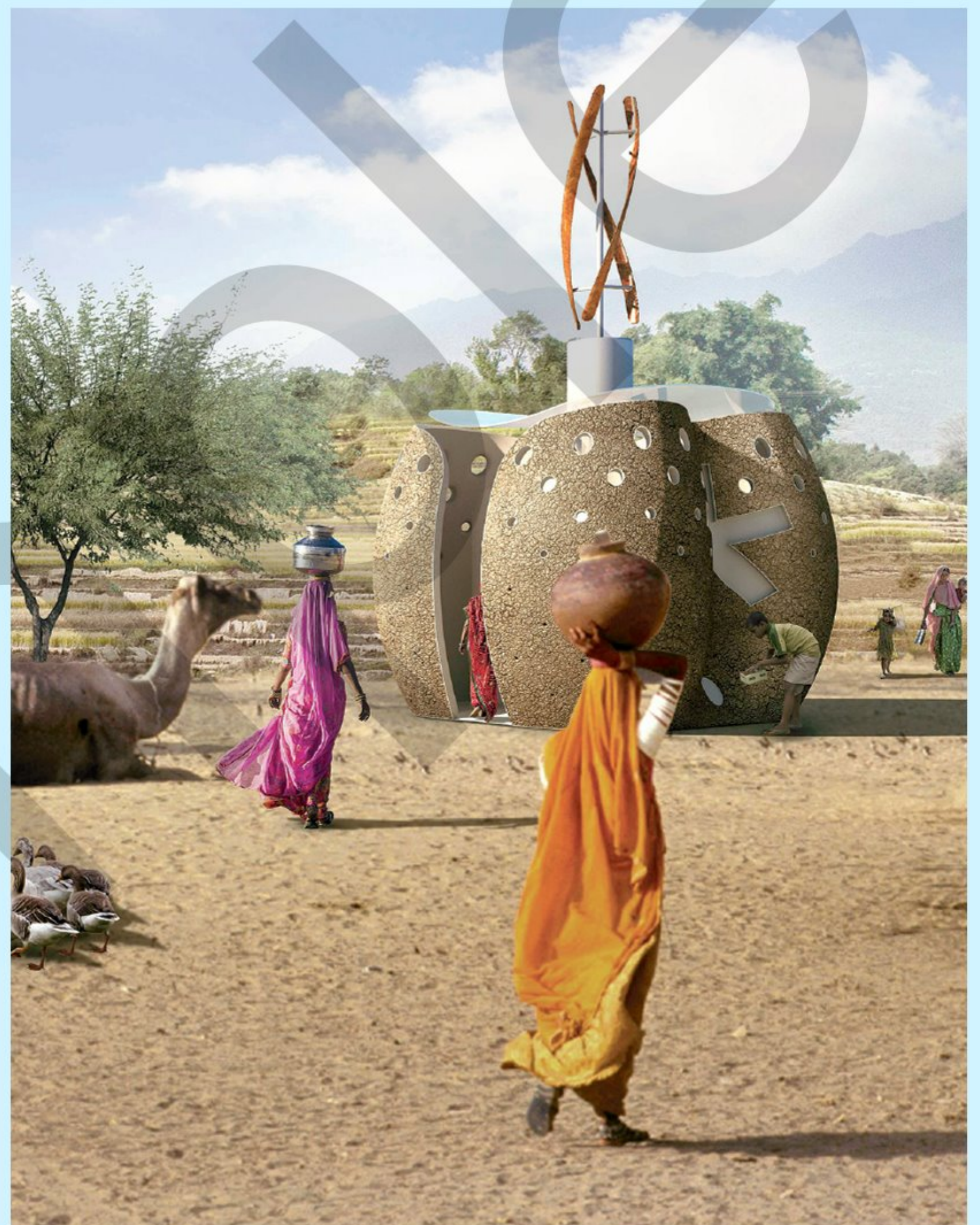
■ **Figure 8.7** Designing toilets that do not need a sewage system

LooWatts are toilets that do not require water. They can be used off-grid/without connection to a sewage system. The waste is captured in a biodegradable bag, which is then collected and turned into electricity and fertilizer. Currently LooWatt toilets are being used everywhere from developing countries through to music festivals.

MEET THE DESIGNER

The Big Arse Toilet

www.sparkarchitects.com/portfolio_page/spark-gives-a-sht



■ **Figure 8.8** Utilizing technology in toilet design

The Big Arse Toilet, designed by SPARK studio, is a 3-D printed toilet that turns human waste into electricity. It's designed to be lightweight and easily transportable, with the component parts arriving to location by drone.

MEET THE DESIGNER

minimLET

www.nendo.jp/en/works/minimlet

<https://youtu.be/hB7fmDdmk78>

minimLET is a portable, lightweight toilet designed for people who have been impacted by natural disasters. It was created by a Japanese design team, Nendo, who saw the problems people faced with access to toilets after several large earthquakes in Japan. The solution is easy to carry, has a tent for privacy and can be stored flat.

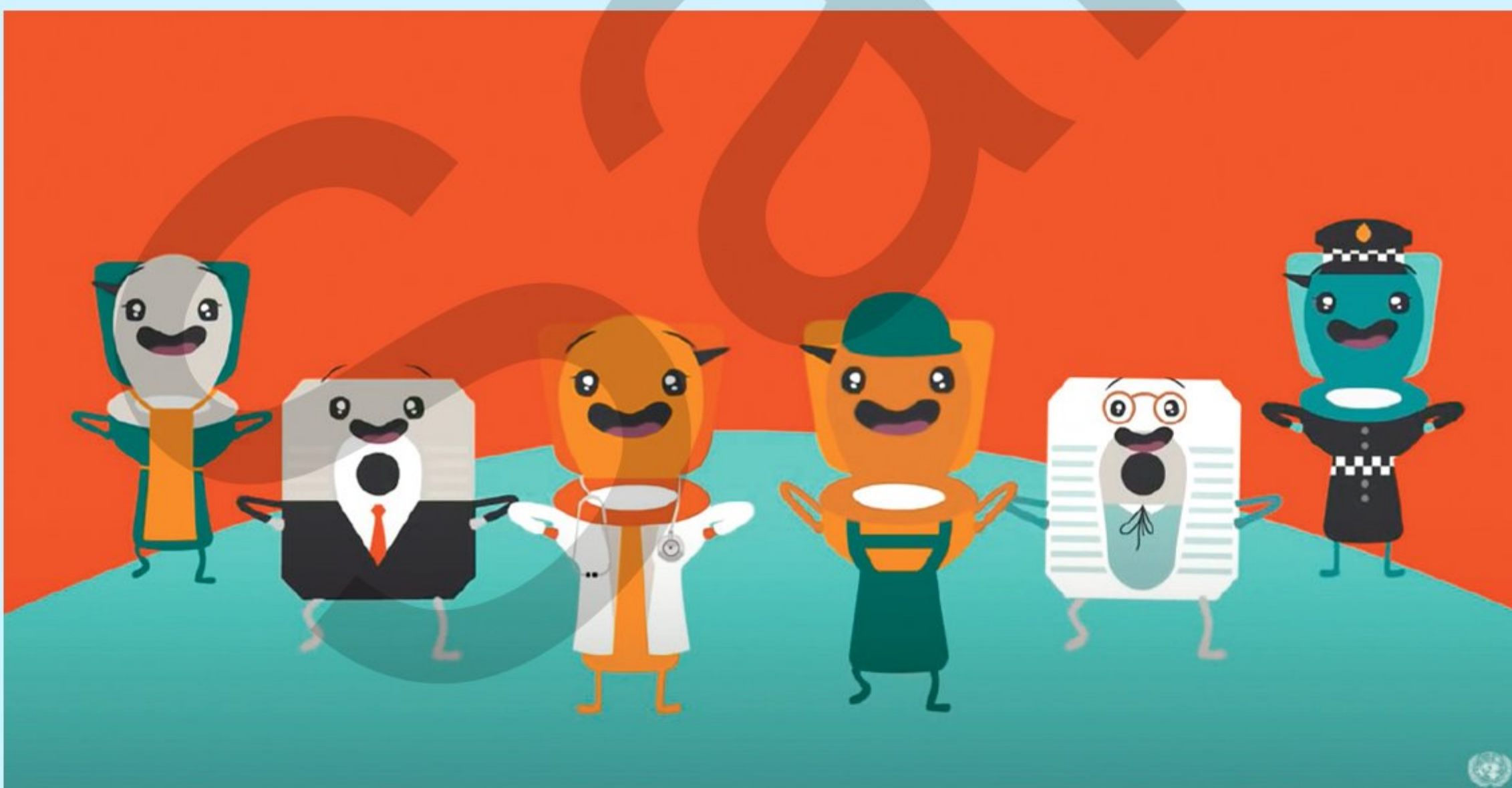


■ **Figure 8.9** Ensuring access to toilets during natural disasters

MEET THE DESIGNER

World Toilet Day featuring the Working Toilets

<https://youtu.be/NjIEqowcOqc>



■ **Figure 8.10** An animation for World Toilet Day

This animation, created for the UN for World Toilet Day 2016, shows the benefits of clean toilets. The wordless music video shows havoc caused by poos – but the day is saved by toilets!

MEET THE DESIGNER

World Toilet Organization

www.worldtoilet.org



■ **Figure 8.11** Sanitation is a global issue

The World Toilet Organization, founded in 2001, is a non-profit that focuses on improving sanitation around the world. It focuses on policy change, education, awareness and more. This organization unofficially launched World Toilet Day in 2001, which was later adopted by the UN.

MEET THE DESIGNER

World Toilet Day

www.worldtoiletday.info



■ **Figure 8.12** Promotional material and events are vital for raising awareness

One of the free posters available to download for World Toilet Day 2021. Every year they release more posters and other resources to help people promote this day. Their resources are usually available in Arabic, Chinese, English, French, Russian and Spanish. Their website also gets a fresh appearance and theme every year.

MEET THE DESIGNER

Sanitation First

<http://sanitationfirst.org>



■ **Figure 8.13** Charities play an importance role in educating people on the issues

Sanitation First's website aims to educate about the importance of toilets and also fundraise to support their mission to bring toilets to people around the world. The

charity has a focus on menstrual health, through teacher and student education. They also provide reusable sanitary pads to schoolgirls in need.

How might having access to a toilet positively impact other parts of someone's life?

ACTIVITY: How might existing solutions help me?

■ ATL

- Information literacy skills: Evaluate and select information sources and digital tools based on their appropriateness to specific tasks

The types of existing products you **analyse** will depend on what you plan to **create**. If you are creating an animation about raising awareness of the problems of defecating outdoors, you may **analyse** both existing animations (which might not be anything to do with toilets), as well as other awareness-raising solutions (which might not be animations). If you plan to **design** a prototype for a waterless toilet, you should **analyse** existing models. You might look at other helpful products. This could be the absorption of nappies for example.

When **analysing** the existing solutions:

- **describe** who they are aimed at
- **state** what their purpose is
- **highlight** the pros and cons of the design
- **suggest** how it would work for your chosen situation or target audience.

Remember that the reason for analysing existing solutions is to give you ideas and help you with your own design.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A iii: Analyse existing products.

DISCUSS: Is squatting best?



■ **Figure 8.14** The healthiest position for defecating mimics a squat

Many toilets, especially 'hole in the ground' style toilets, are designed so that you squat while you go. The traditional western toilet does not enable squatting. Recently companies selling stools, such as the Squatty Potty, which helps your body create a squatting shape, have become more popular. However, some of the companies making these products exaggerate the benefits, suggesting they can get rid of irritable bowel syndrome and deliver other health benefits. While squatting definitely helps you strain less, which can be more comfortable and help prevent haemorrhoids, the overall health benefits are unknown.

Will your design allow for squatting?

EXTENSION

You may wish to do some further research by investigating the following links:

Toilets

- Clean Catch: www.jamesdysonaward.org/de-DE/2020/project/clean-catch
- Dezeen Toilets: www.dezeen.com/tag/toilets
- Meridian portable toilet solution: www.jamesdysonaward.org/de-DE/2017/project/meridian-portable-toilet-solution-pts-2
- Night Loo: www.jamesdysonaward.org/de-DE/2018/project/night-loo
- Public urinal lets you pee into the wall: www.cnet.com/news/public-urinal-lets-you-pee-into-the-wall
- Public urinal provides locally-sourced fertilizer for urban greenery: <https://popupcity.net/observations/publicurinal-provides-locally-sourced-fertilizer-for-urban-greenery>
- Sanicle: www.jamesdysonaward.org/de-DE/2019/project/sanicle
- Sustainable, worm-based communal sanitation for refugee camps: www.elrha.org/project/sustainable-worm-based-communal-sanitation-refugee-camps

Videos

- Can you imagine a life without toilets: <https://youtu.be/968643i0pWM>
- How the toilet changed history: <https://youtu.be/GWQG1YZS9l4>

- Making India open defecation free: <https://youtu.be/ffp8HyHQQsU>
- Unicef – End open defecation: <https://vimeo.com/138188080>
- World Toilet Day Challenge: <https://youtu.be/GUEaMGKVhKw>

Websites

- The water we eat: <https://thewaterweeat.com>
- Toilet Twinning: www.toilettwinning.org
- Water Aid: www.wateraid.org

Other

- Epidemic Prevention: www.jamesdysonaward.org/2017/project/epidemic-prevention-2
- How to use a squat toilet: www.wikihow.com/Use-a-Squat-Toilet
- Reinvented: Futuristic toilet extolls the health benefits of squatting: www.smithsonianmag.com/innovation/reinvented-futuristic-toilet-extolls-the-health-benefits-of-squatting-180948272/?no-ist
- SheWee: www.shewee.com
- Squatty Potty: <https://youtu.be/YbYWhdL043Q>
- What is the best position for pooping?: www.healthline.com/health/best-position-for-pooping
- What's the best position for pooping?: <https://youtu.be/34WvElCZOBo>

WATCH AND DISCUSS

Why public toilet seats are shaped like a U: <https://youtu.be/EWHIXkZaixM>

Will this video impact your design too?



ACTIVITY: Elevator pitch

■ ATL

■ Collaboration skills: Build consensus

Imagine that the UN gives mini grants to help projects get started. Although you are aiming to show your finished design so you can get a full grant and launch production of your product, a small grant will help you get started. This small pitch can also be used as practice for later. You can use your design **brief** to **explain** what you want to make and why, and to **explain** what makes your idea special. For this activity imagine that you only have the amount of time you might spend riding in an elevator to deliver your design brief. Use the following format to help you persuade someone that your idea is worthy of a grant. Write only one or two sentences for each part.

- **The Hook:** Open with a statement that grabs the attention of the listener.
- **The Problem:** Use some of the 'killer facts' you collected earlier to **describe** the problem you want to solve. You should make a connection here with Global Goal 6.
- **The Solution:** **Describe** what you will make.
- **The Wow Factor:** **Describe** what makes your product unique/special.
- **The Impact:** What impact do you think your product will have on solving the problem you identified?
- **The Action:** Describe your next steps – how will the grant help you?

Remember to keep it clear and concise – you are just summarizing your plan, not explaining every detail!

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A iv: Develop a design brief.

ACTIVITY: Specifications

■ ATL

■ Organization skills: Use appropriate strategies for organizing complex information

Imagine you have been awarded a mini grant to get started but need to provide detailed **specifications** to help keep you accountable. Your specifications are a detailed list of what the product needs to have to be successful. It is not a description of your product.

As you have been awarded a grant, you should make sure your specifications include financial detail. In reality, you might not be spending any money on your product, but you should add potential costs anyway. If you are designing a poster, for example, you could include printing and laminating costs even if you are only creating the work digitally for this project. You could also look at how much designers get paid and work out how much your time would cost per hour.

Your specifications should be based on your design brief and the research you did earlier. Your design specifications should be laid out in a table. You might add a column where you can write the reason for each specification.

6 CLEAN WATER AND SANITATION



■ **Figure 8.15** Global Goal 6: Clean water and sanitation

Remember that part of the **design situation** states that you should brand your product with the UN's Global Goal for clean water and sanitation. The Global Goals website allows you to download the primary icon and target icons in both PNG and vector formats. You might also want to use a colour picker website to find out the exact colour of the goal. This way you can use it in your design too.

- www.globalgoals.org
- <https://imagecolorpicker.com/en>

If you don't have a reason, you should question whether the specification is really necessary or not. Similarly, you could also add a column to **describe** how important each specification is. Some things will be fundamental to your design. Other things could just be something nice to include. You might also want to divide the table into specification types with different rows for these, such as **aesthetics** or materials.

Use the knowledge you have learnt in previous units to help you decide on the headings for your design specifications table. Remember, you want the information organized in a way that helps you move forward with making your product but will also help you assess your product.

If you were working as a real designer, sometimes these specifications can be used as a contract between you and your **client**. The information should therefore be organized in an appropriate way that others will understand too.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B ii: Develop a design specification.

ACTIVITY: Generating ideas

■ ATL

- Organization skills: Select and use technology effectively and productively

Now it's time to generate some visuals of your initial ideas. Generate three to five different ideas. The type of product you plan to eventually make should impact the tool you use to **create** your initial ideas. While designers often use hand-drawn sketches to help them at this stage, for this project use a digital tool to help you with this step.

You could be using anything from CAD software through to a digital illustration tool to **create** wireframes for a website. Make sure you choose a tool that will help you best show your initial ideas. When you come to pitch your final design, it will be important to show the design process. You will need to show the different steps you took to make sure your final idea was the best possible solution for the problem. Having clear visuals that show each step will help others understand the process you went through. Adding annotations to your images will also help with this.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B i: Develop design ideas.



■ Figure 8.16 A sketch of a toilet design

ACTIVITY: My best idea is ...

■ ATL

- Critical-thinking skills: Evaluate evidence and arguments

Compare each of your ideas against your design specifications.

Which idea meets the most of your specifications? Is this the design you will **develop** further?

If not, why not?

If you choose a design that meets fewer specifications than another, make sure you can **justify** your choice.

- Maybe the idea you have chosen meets more of the important specifications.
- Maybe you realized one of the ideas is not practical or you will not be able to make it in the time given.
- Maybe you have received additional **feedback** from someone important that made you pick a different idea.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B iii: Present and justify the chosen design.

ACTIVITY: My final product will look like ...

■ ATL

- Communication skills: Interpret and use effectively modes of non-verbal communication

Before you start making your product you should make a detailed visual. Although you will add annotations, your visuals should be clear enough for someone else to picture your final design.

This might be a two-dimensional or three-dimensional sketch. It could be a physical prototype made from wood or clay. It might be a basic CAD model, a detailed layout for a website, a storyboard for an animation or something else.

Your design should be to scale and might include rendering to show colour, material and texture. If you are making a physical object, you might consider drawing several versions, for example an exploded view or **orthographic** or isometric projections.

If you are creating a digital resource, like a website, it might help if you **create** several images to show how different parts connect. Creating these detailed sketches before making your final product will help you troubleshoot any potential problems. It will also help you when producing your product, as you will have made all the creative decisions already.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B iv: Develop planning sketches.



Useful websites to visit:

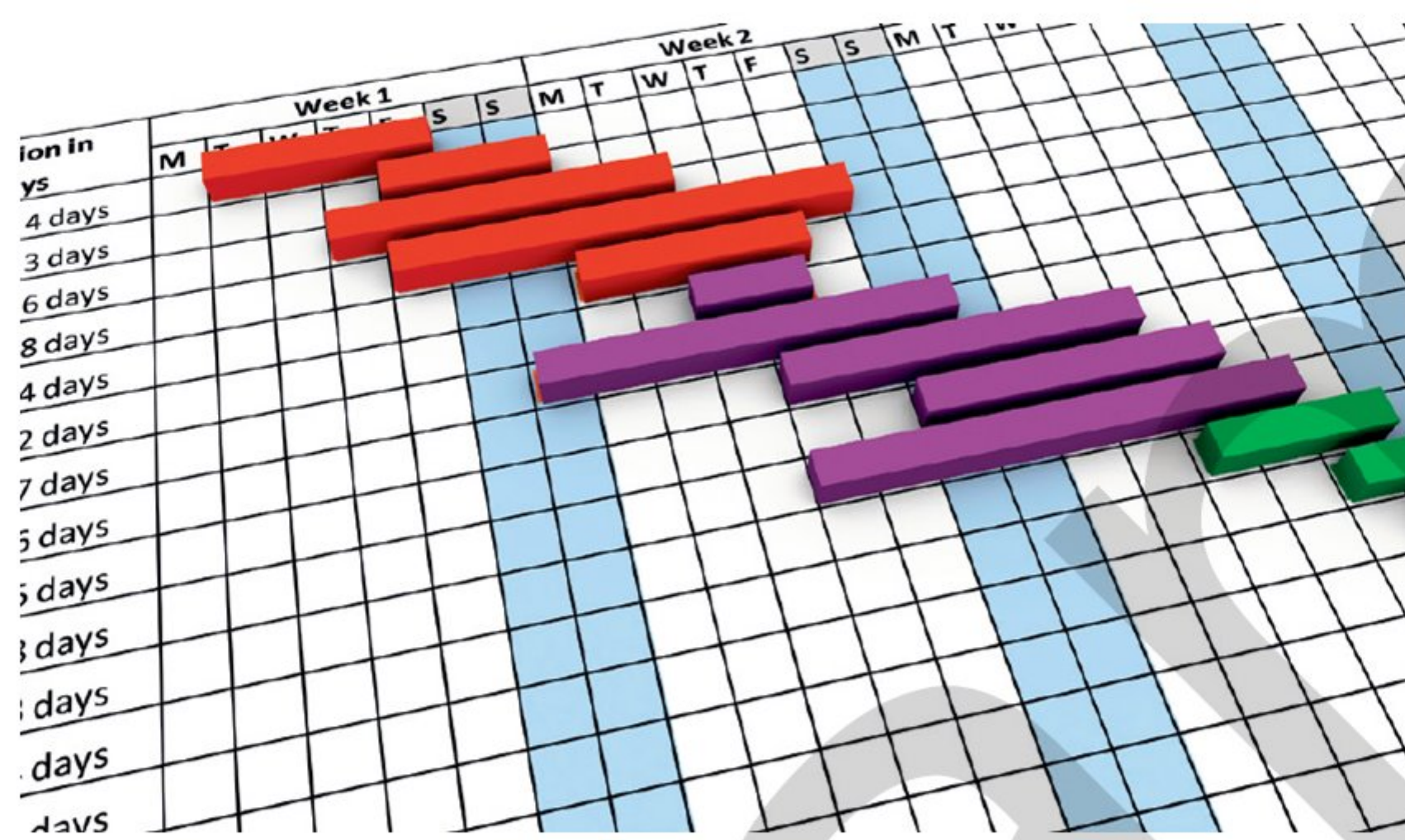
- <https://asana.com>
- <https://clickup.com>
- www.lucidchart.com
- <https://monday.com>
- www.teamgantt.com

■ **Figure 8.17** A CAD model of a toilet design

ACTIVITY: GANTT chart

■ ATL

- Organization skills: Set goals that are challenging and realistic



■ **Figure 8.18** An example of a GANTT chart

Work out how many classes you have left to work on your design solution and plan how you will spend your time. Make sure you do not overestimate what you can achieve in a single lesson. Put your plan into a GANTT chart to show how you will manage the rest of your

time on this project. A GANTT chart is a bar chart that allows you to share the different phases of your plan and provides a lot of flexibility. Each bar shows a period when you hope to work on a step of the project. You will see that different bars can overlap, which allows you to finish different parts earlier or spend more time on them if needed.

You can **create** your GANTT chart in a simple spreadsheet or use one of the many free online generators available. The online ones have the benefit of being dynamic – they can be adjusted as you go, so you can record the progress you are making.

GANTT charts can also be used for collaboration, with different bars showing different steps taken by different people at the same time.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion C i: Construct a logical plan.

ACTIVITY: Time-lapse video

■ ATL

- Transfer skills: Combine knowledge, understanding and skills to create products or solutions

Create a time-lapse video to show you creating your project. This might mean setting up a phone, camera or tablet in your workshop or recording your screen on your computer. You should practise this before you start making your product to make sure you don't have any technical problems, so that you are able to capture the process you took to make your product.

Once you have recorded your time-lapse video you should edit it to add in extra details to show off what you are doing. You might decide to have some 'real-time' sections showing particularly interesting or difficult stages. You might have on-screen text or record a voice-over. You might even choose to overlay the video with your plan, to show how you followed each step. Use this as an opportunity to **justify** any changes you made to your original plan or design.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion C ii: Demonstrate technical skills and C iv: Justify changes made to the plan.

ACTIVITY: Showing off your product

■ ATL

- Creative-thinking skills: Apply existing knowledge to generate new ideas, products or processes



■ **Figure 8.19** An example of an image that allows you to drop in your own design so you can show off what it would look like if it was really displayed in this, or a similar, location

Now it's time to show off the final product. Decide what is the best way to show it off. If you have a physical product you will need to take photographs, at different angles, with appropriate lighting. If you have created a digital product, you should take high-resolution screenshots.

You should then show the product in the situation it is intended to be used in. If you have created a poster, you might show us what it would look like on a billboard or at a bus stop. Online you can find many images to help you do this in photo libraries, using the search terms **mock-up**, **render** or **rendering**. These usually have white spaces where you can insert your design.

If you have a product, you can look for images of the space it is intended to be used in, then digitally add your image to show it in the right context.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion C iii: Follow the plan to create a solution.

ACTIVITY: Testing before the big pitch

■ ATL

- Critical-thinking skills: Troubleshoot systems and applications

Before you pitch your final product, you need to **create** testing methods. These will help you gather data to show that your product is successful. Go back to your original design brief and think about the big problem you were trying to solve. How can you best prove that you achieved this goal?

Make sure you also decide how you will prove that you met each of your specifications. You should include a range of test types. These might include **field trials**, **expert appraisal**, **performance testing**, user observations and **user trials**.

For this project, try to gather data that can also show you how your product could be improved. Remember the design situation: you are going for a grant, so being able to **identify** ways you could make your product even better could help you with your pitch. Although generally when creating a testing product you will want to have objective feedback, which helps you clearly **analyse** the success of the product, open questions will be useful.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion D i: Develop testing methods, D ii: Evaluate the success of a solution and D iii: Explain how to improve the solution.

DISCUSS: Big impact toilets

View at least one of the links below. Pick out the toilet that you think might have the biggest impact on the world. **Explain** the reasons for your selection to a classmate. Do they agree or disagree? Which toilet do they think has the potential to make the biggest impact?

- **Three groundbreaking new toilets:**
<https://youtu.be/FaLZUJAAgnk>
- **Eight toilet designs that could save millions of lives around the world:**
<https://inhabitat.com/8-toilet-designs-that-could-save-millions-of-lives-around-the-world>
- **Eight toilets from the future:**
<https://youtu.be/mLXrEDBNjGA>
- **Bill Gates thinks these toilets could change the world:** https://youtu.be/_uvzKzWpRNI
- **CNN Ideas: Students invent 'toilet of the future':**
<https://youtu.be/eWh8N7cuZC4>

ACTIVITY: The big pitch



■ ATL

- **Communication skills: Organize and depict information logically**

Now it's time to put all your work together for your grant pitch. The focus of the presentation should be the problem you identified and how your product can solve that problem. In every step, focus on the impact you hope your product will have. Make sure you use evidence to **justify** your argument. This might include everything from your initial research, through to the data gathered from your product tests.

Before writing the whole presentation you might want to plan the layout. **Create** a slide deck and on each slide write one sentence about the slide's purpose. You might lay out your presentation following the design cycle, or you might draw inspiration from your earlier **elevator pitch**. When you have everything in an order that makes the most sense to you, you can go back and start adding in more text and images. You might want to add slides to show off the different activities so far, so that the audience can see the process you went through.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion D iv: Explain the impact of the solution.



Communication skills

When presenting an idea, it can be useful to use different types of persuasive language.

Here are some tips to help:

- Use positive adjectives.
- Don't repeat adjectives. Use a thesaurus if needed.
- Use facts to back up every opinion you share.
- Use statistics and facts.
- Connect your ideas and product to the facts presented.
- Use emotion.
- Use the present or future tense.
- Use some generalizations to get the audience on board with you. ('We can all agree that ...')
- Use technical words to show that you are an expert.
- ... but also **explain** things simply, so that the audience understands.
- Don't repeat yourself.

EXTENSION

If this project has got you excited about the idea of toilets, you might want to look up South Korea's Toilet Theme Park:

- Flushed with pride, Korea celebrates toilet theme park: www.cnet.com/news/flushed-with-pride-korea-celebrates-toilet-theme-park
- South Korea's toilet museum: a place for contemplation: www.theguardian.com/world/2012/nov/09/south-korea-toilet-theme-park

If you found World Toilet Day inspirational, you may want to learn about Menstrual Hygiene Day:

- Menstrual Hygiene Day – 28 May:
<https://menstrualhygieneday.org>

If you just enjoyed looking at different toilets, you might want to check out these articles:

- 25 weird toilets of the world:
www.hostelbookers.com/blog/travel/weird-and-wonderful/toilets-of-the-world
- People post toilet views from around the world to show where they pee and poo:
www.boredpanda.com/amazing-toilet-views-around-the-world/?utm_source=ecosia&utm_medium=referral&utm_campaign=organic
- Weird and wonderful photos of crazy toilets from around the world shaped like musical instruments, flowers and skulls:
www.mirror.co.uk/news/weird-news/gallery/weird-wonderful-photos-crazy-toilets-11460043

! Take action

! There are many ways you can take action to help us achieve Global Goal 6 beyond what you have done during this chapter. Some ideas include:

- ◆ Fundraising for a toilet charity you have learnt about.
- ◆ Improving the toilets in your school. This could be through adding posters with positive messages, providing free sanitary pads or even introducing gender-neutral toilets.
- ◆ Collecting sanitary pads and toilet roll to donate to local homeless shelters.
- ◆ Speaking about the importance of Global Goal 6 in a class or assembly.
- ◆ Organizing an event for World Toilet Day.

! The following websites have ideas for taking action:

- ◆ Kiva – Give someone a loan to build a toilet:
www.kiva.org/lend-by-category/water-and-sanitation
- ◆ Oxfam Gifts – Give the gift of an emergency toilet:
www.oxfamgifts.com/gifts/emergency-toilet
- ◆ Together Band – Buy a bracelet to support Goal 6:
<https://togetherband.org>
- ◆ Toilet Twinning – Ideas for taking action:
www.toilettwinning.org/get-involved
- ◆ WaterAid Fundraising Ideas: www.wateraid.org/au/get-involved/world-toilet-day-fundraising-activities-and-ideas
- ◆ World Toilet Day – Use their toolkit for ideas for taking action:
www.worldtoiletday.info

Reflection

In this chapter we found out about the importance of having access to a toilet. We explored how designers are bringing toilets to more people and we took action by either designing our own toilets, raising awareness or creating an educational campaign.

Use this table to reflect on your own learning in this chapter.					
Questions we asked	Answers we found	Any further questions now?			
Factual: How many people in the world have access to a toilet? How can having access to a toilet impact your physical and/or mental health? What are the main reasons some people don't have access to toilets?					
Conceptual: How might having access to a toilet positively impact other parts of someone's life?					
Debatable: 'Toilets First, Temples Later'? (Narendra Modi). If everyone in the world had access to a toilet, would we be much closer to global equality?					
Approaches to Learning you used in this chapter:	Description – what new skills did you learn?	How well did you master the skills?			
		Novice	Learner	Practitioner	Expert
Communication skills					
Collaboration skills					
Organization skills					
Reflection skills					
Information literacy skills					
Critical-thinking skills					
Creative-thinking skills					
Learner profile attribute(s)	Reflect on the importance of being open-minded for your learning in this chapter.				
Open-minded					

9

How can animation help us understand complex issues?

- By **communicating** key issues about **human impact on the environment**, we can change **consumer behaviour**.

CONSIDER THESE QUESTIONS:

Factual:

Which human activities most negatively impact the environment?
Which campaigns have been successful with raising awareness of human impact on the environment?

Conceptual:

How can designers change consumer behaviour?

Debatable:

Should information shared about human impact on the environment be purely factual?

Now **share** and **compare** your thoughts and ideas with your partner or with the whole class.

KEY WORDS

persuasion

propaganda



Figure 9.1 How can designers change consumer behaviour?

IN THIS CHAPTER, WE WILL ...

- find out** about different ways humans are negatively impacting our environment
- explore** how designers are raising awareness of these problems
- take action** by creating our own product to inspire positive behavioural change.

These Approaches to Learning (ATL) skills will be useful ...

- Communication skills
- Collaboration skills
- Organization skills
- Reflection skills
- Information literacy skills
- Critical-thinking skills
- Creative-thinking skills



◆ Assessment opportunities in this chapter:

- ◆ **Criterion A:** Inquiring and analysing
- ◆ **Criterion B:** Developing ideas
- ◆ **Criterion C:** Creating the solution
- ◆ **Criterion D:** Evaluating

● We will reflect on this learner profile attribute:

● Thinker

We will use critical and creative thinking skills to determine how we can best take responsible action as individuals and as designers.

DISCUSS

With a partner try to **list** the ways humans negatively impact the planet. Here are three ideas to get you started: deforestation, using plastic straws and travelling by plane.

Once you have compiled your list, work with the class to add all your ideas together. Write them on sticky notes. Make sure you do not have any repeats. You might use this list later when choosing an area to focus on.

Humans are the biggest threat to the planet. Our actions can negatively **impact** the natural environment, animals and other people. While big organizations and governments impact the planet negatively, everything we do as individuals also has an impact. Whether it is the food we eat, the products we purchase or the energy we use, we leave a footprint on the planet. In this chapter we will learn more about the various ways we impact the planet. You will then choose an area of impact to focus on and will **create** an animation to try to change people's behaviour. You'll also explore existing campaigns, focusing on videos, and will think about the ethics of bringing creativity, through design, into these campaigns, instead of just stating the facts.

What actions are humans doing that are negatively impacting the environment?



■ **Figure 9.2** Deforestation

GLOBAL GOALS



■ **Figure 9.3** The UN's Global Goals directly link to the actions and consequences of humans' negative impact on the world around us. Look at the sticky notes you generated with your class. Can you organize these by Global Goals? Do any of the issues raised connect to multiple goals?

ACTIVITY: Negative impact on the environment

■ ATL

■ Information literacy skills: Collect and analyse data to identify solutions and make informed decisions

(WARNING: Graphic and potentially upsetting images in this activity.)

Use these images to help you with creating your list of the ways in which people negatively impact the environment:

- www.boredpanda.com/environmental-pollution/?utm_source=google&utm_medium=organic&utm_campaign=organic
- www.boredpanda.com/environmental-pollution-overdevelopment-overpopulation-overshoot-global-population-speakout/?utm_source=google&utm_medium=organic&utm_campaign=organic



■ **Figure 9.4** What would you write on a protest sign to encourage positive change?

GRETA THUNBERG

Greta Thunberg, a Swedish teenager, is an environmental activist who focuses on climate change. She rose to fame for her school climate strike. She has also taken action through social media activism, speaking engagements and helping start Fridays for Future.

In Greta's speech at the UN Climate Change COP24 Conference she said, 'you are never too small to make a difference'. This phrase has been repeated in many of her other speeches and aims to show how individuals can make a change.

Fridays for Future: <https://fridaysforfuture.org>

DISCUSS

With a partner think about the daily actions you take and how they impact the environment.

Make a **list** of your daily tasks and think about what their possible impact might be. Think about what you eat for breakfast, for example. Ask yourself where the food comes from and the impact that has.

How would you change any of the tasks to reduce the impact you have?

EXTENSION

The following links might give you some ideas for making a positive change:

- 10 life changes that will actually make a difference for the environment: www.huffpost.com/entry/how-to-help-the-environment_l_5e1f9811c5b674e44b92119a
- Everything you do has an impact on the planet: www.independent.co.uk/climate-change/news/everything-you-do-has-an-impact-on-the-planet-5348437.html
- How to save the planet: 10 changes with the biggest impact: <https://twenti.com/how-to-save-the-planet-10-changes-with-the-biggest-impact>
- WWF – Measure your impact: https://wwf.panda.org/act/live_green

Design situation

An environmental charity is running a competition called 'Be The Change'. They are asking for submissions of short animations to raise awareness of humans' impact on the environment. These should aim to change people's behaviours.

The videos can be no more than three-minutes long and can take the form of the following animations: 2-D, 3-D, traditional, stop motion, whiteboard or other.

The video should not be a documentary but should use creative measures to encourage the audience to make a positive change. They should be aimed at the general public.

Note: Alternatively, you could approach this chapter with a final product, such as a poster campaign. However, you will need to **analyse** different products and won't use a storyboard in your planning.



■ **Figure 9.5** Many people are aware of the negative impact factory farming has on the animals involved, but there is also a negative impact on the environment because of the huge carbon footprint of meat production

DISCUSS

With a partner, discuss which issue you will focus on and why.

Examples: Palm oil use, fast fashion or factory farming.

ACTIVITY: What problem is worth solving?

■ ATL

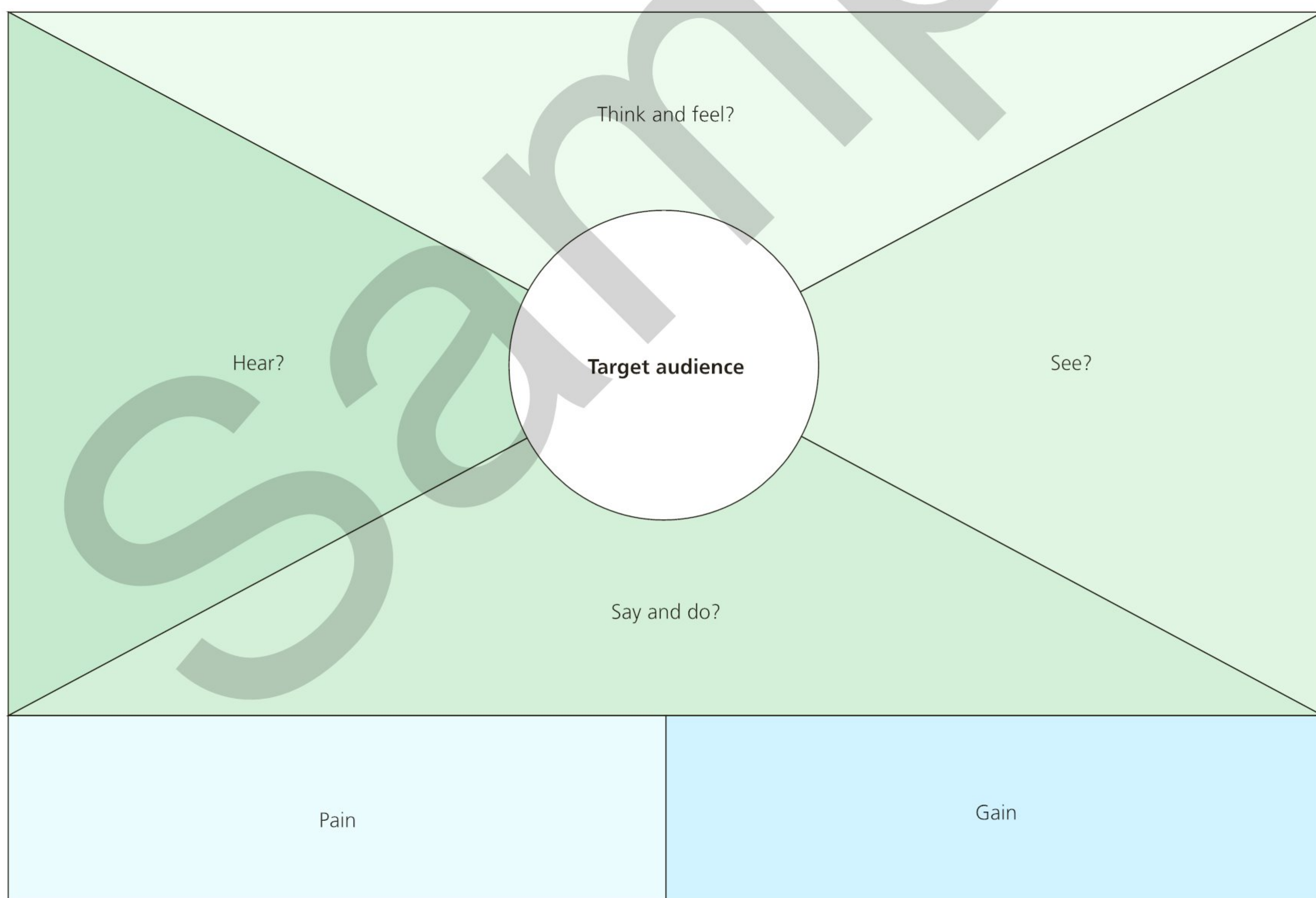
- Information literacy skills: Access information to be informed and inform others

You have decided on the topic you will focus on but need to show others why the topic is important. Find three facts from different sources to show why the problem you are focusing on is important. You should be focusing on a problem affected by human behaviour. Your product will have the potential to make a positive change as a result. **Explain** the relationship individuals have to the problem. If you are focusing on deforestation, for example, you could **describe** how the products we buy and the food we eat are linked to it.

ACTIVITY: Empathy map – understanding your audience

■ ATL

- Collaboration skills: Listen actively to other perspectives and ideas



■ Figure 9.6 Example empathy map

Identify a singular change you want your target audience to make.

Lastly, write a single 'How Might We?' sentence to **describe** your product.

Use the following format to help you frame your question:

'How might we create a [video type] about the impact of [topic] to encourage people to [behavioural change].'

Example: 'How might we create a stop motion animation about the impact of meat consumption to encourage people to cut meat out of their diets?'

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A i: Explain and justify the need.

Everything we do has consequences. We are often aware of these consequences but choose to ignore them. For example, we know the damage caused by eating battery farmed chickens, buying fast fashion and travelling by car, but we do it anyway. When we make these choices is it because we don't care? Is it because we are choosing convenience? Or because we are driven by cost?

Using an empathy map may help us better understand complex problems and what might be motivating people to make these choices. An example might be asking someone why they eat meat, even though they know it has a negative impact on the environment. They may only be able to give a short answer if we asked them, but an empathy map can unpack more; maybe they feel bad about meat consumption (feel), but their family say that it is not too bad (hear). Maybe they feel attached to certain meat-based comfort foods (feel) and enjoy eating them with friends (do). Maybe they worry that becoming vegetarian will cost too much money (think/pain), but they believe it would be healthier (feel/gain). They might express that they will switch their diet at some point (say), but feel they haven't got the time to learn new recipes (do/pain).

When filling in your empathy map, think about the type of person you want your video to influence.

Use the following questions to help you complete the map.

- **Think and feel:** What is important to them? What drives them emotionally?
- **See:** How much of the impact of their choices do they see? What trends do they care about? What do they see around them? What do they see others doing? What are they watching and reading?
- **Hear:** Who are they influenced by? Whose opinions do they care about? What do they hear from their friends/colleagues/family? What have they heard about your topic?
- **Say and do:** What do they say about their choices? What actions do they take? What might you observe them doing?
- **Pain:** How much would changing their behaviour negatively impact them? What concerns them about making a change?
- **Gain:** How much would changing their behaviour positively impact them? What might motivate them to make a change?

ACTIVITY: What do you need to know to influence others?

■ ATL

- Information literacy skills: Collect and analyse data to identify solutions and make informed decisions

2 WHO ARE WE TRYING TO INFLUENCE WITH EVIDENCE AND HOW? (indicative lists)

AUDIENCES AND EVIDENCE THEY RESPOND TO BEST



■ **Figure 9.7** A section of the 'Planning Research for Influencing' document, a resource created by the Oxfam Research Network to help you take action

You've gathered some initial research to show why your topic is worth exploring. You now need to gather information to show your audience why your topic is important enough for them to change their behaviour.

Different types of information will appeal to different types or groups of people. Use section two of Oxfam's 'Planning Research for Influencing' guide, along with your empathy map, to come up with a list of research questions to help you **develop** your product. Remember that you are designing *for* the general public.

Create a **list** of research questions and **identify** what sort of facts they will provide you (for example, 'giving

a human face to the story' or 'killer facts – easy to remember'). Remember you are trying to get your audience member to make a behavioural change – what facts will encourage them to do this?

Put your questions in order from most important to least important. Use a variety of sources to answer the questions and **create** citations for each source used.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A ii: Identify and prioritize the research.

RESEARCH: The CRAAP test

There is no point finding facts that are not reliable. If they are out of date, not relevant or even made up, they will not help you. There is no way to 100 per cent test the validity of your sources, but a useful tool to help you critically **analyse** the information you use is the **CRAAP test**.

The following websites are useful:

<https://researchguides.ben.edu/source-evaluation>

https://libguides.cmich.edu/web_research/craap

<https://kidsboostimmunity.com/evaluating-online-information-sources-craap-checklist>

<https://youtu.be/tVqnamWs91I>

Use the questions related to **currency**, **relevance**, **authority**, **accuracy** and **purpose** to help you.

TYPES OF ANIMATION

There are many types of animation, usually divided into the five main categories: traditional animation, 2-D animation, 3-D animation, motion graphics and stop motion.

- **Traditional animation:** This is where the animator draws cells to make each frame of an image. It's similar to a flipbook with drawings. Think of old Disney films.
- **2-D animation:** Similar to traditional animation but done using a computer.
- **3-D animation:** This is where the animator uses a computer to make a 3-D animation. The software allows the animator to add physics to a digital model (called a character rig), so when they manipulate figures to make them 'move' the computer can add in additional movement detail. This is how most modern animations, such as *Toy Story* and *Up* are made.
- **Motion graphics:** This describes animation that does not rely on characters. Think of animated shapes, logos and text.
- **Stop motion:** This is where the animator moves an object, takes a photo, and moves it again, over and over. They then combine the images, just like in traditional animation, to make movement. It's similar to a flipbook, with photos.

Within those five categories are many more types of animation including whiteboard, flipbook, cut-out, zoetrope animation and claymation.

EXTENSION

Learn more by investigating the following links:

- www.blopanimation.com/types-of-animation
- www.yansmedia.com/blog/types-of-animation-styles-and-techniques

WATCH AND DISCUSS



■ **Figure 9.8** Iceland's palm oil advert

Watch the video: <https://youtu.be/oA10-oZi4Xc>

This animation, created by British supermarket Iceland, with Greenpeace, shows the destruction caused by the growing commercial manufacturing of palm oil. It focuses on how deforestation impacts orangutans. This advert was banned from British TV for being too political. The video then went viral and was viewed over 65 million times in the few days after it was banned. It was discussed on news shows and shared on social media, which meant it had much more views than if it was not banned. This video was released before Christmas and follows the trend of emotional Christmas adverts.

The video promotes the supermarket by showing that their own brand products no longer contain palm oil. The advert aims to decrease palm oil consumption, have people view the supermarket in a positive light and, of course, increase their sales.

Do you think this advert should have been banned? Why/Why not?

EXTENSION

It might be useful to look beyond the video – can you find out more about the campaign from the creators?

- www.bbc.com/news/uk-wales-46157107
- www.campaignlive.co.uk/article/icelands-rang-tan-delivers-65m-views-plus-sales-consideration-lift/1520132
- www.theguardian.com/media/2018/nov/09/iceland-christmas-tv-ad-banned-political-greenpeace-orangutan
- www.wired.co.uk/article/iceland-advert-banned-christmas

ACTIVITY: Exploring existing videos

■ ATL

- Media literacy skills: Demonstrate awareness of media interpretations of events and ideas

Using the links on the next four pages, let's look at some existing videos created to raise awareness of an issue related to human impact on the environment and/or to inspire the viewer to make a change.

When you **analyse** them:

- **describe** what happens in the video
- **explain** the issue they are addressing
- **describe** the aim of the video
- **identify** the target audience
- **identify** the types of facts used
- **identify** what works well in the video
- **identify** what does not work so well.

Lastly, take screenshots of key moments of the videos and annotate them, showing any design features.

Some of the videos were commissioned by charities, others were made by individuals. This means that some are linked to specific campaigns, but others might be a personal commentary.

Although it is important to try to **analyse** existing solutions to a problem, you could also benefit and be inspired by other animations, such as Disney, Pixar or Aardman productions. If you choose to **analyse** some of your favourite animations, make sure it is clear how they might impact your solution.

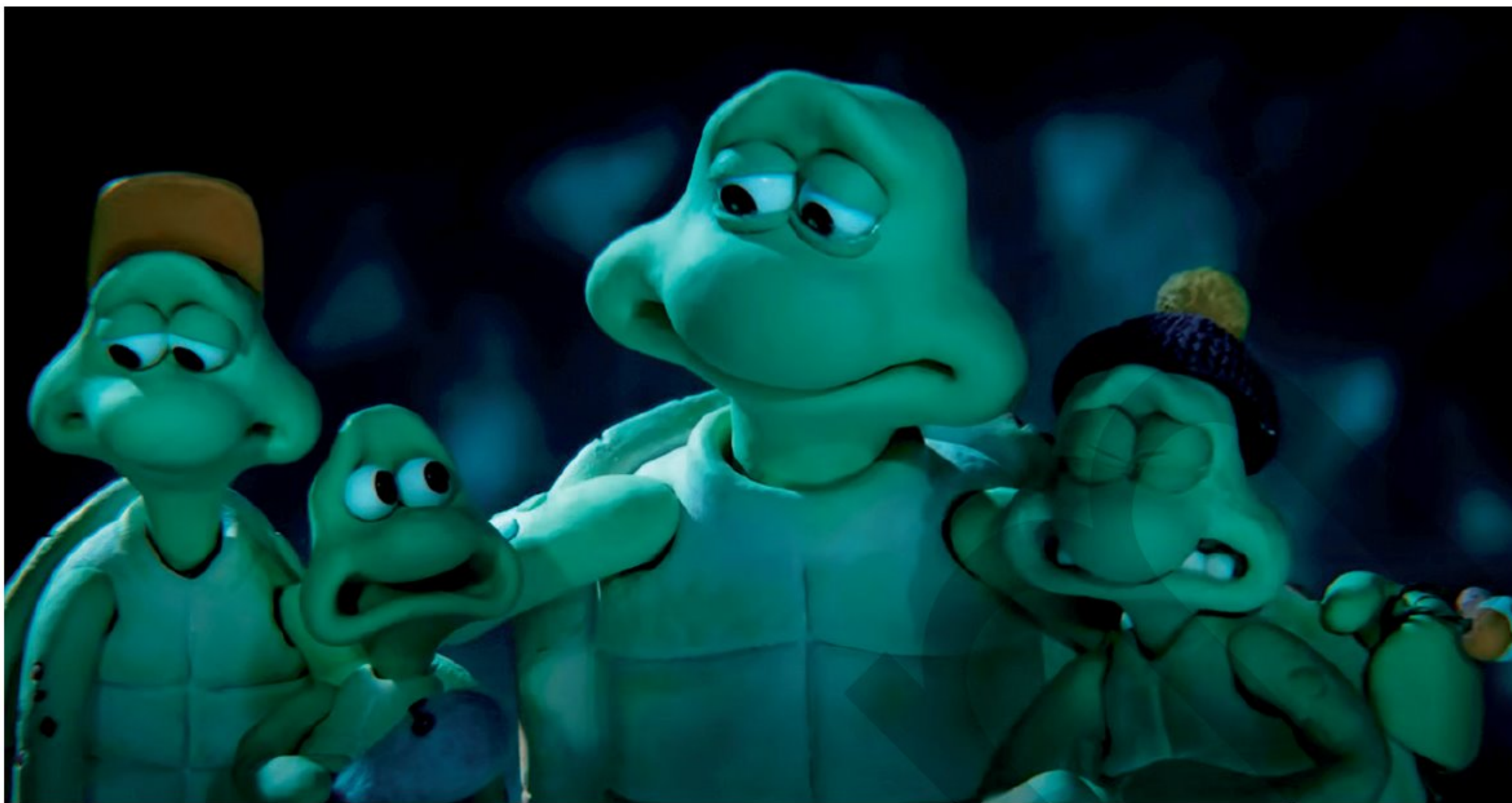
◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A iii: Analyse existing products.

Which campaigns have been successful with raising awareness of human impact on the environment?

Greenpeace: Turtle journey: The crisis in our oceans

<https://youtu.be/cQB4RAZVMf4>



■ **Figure 9.9** A campaign to protect the oceans and animals living in them

WWF: Planet-based diets – Good for us, good for nature!

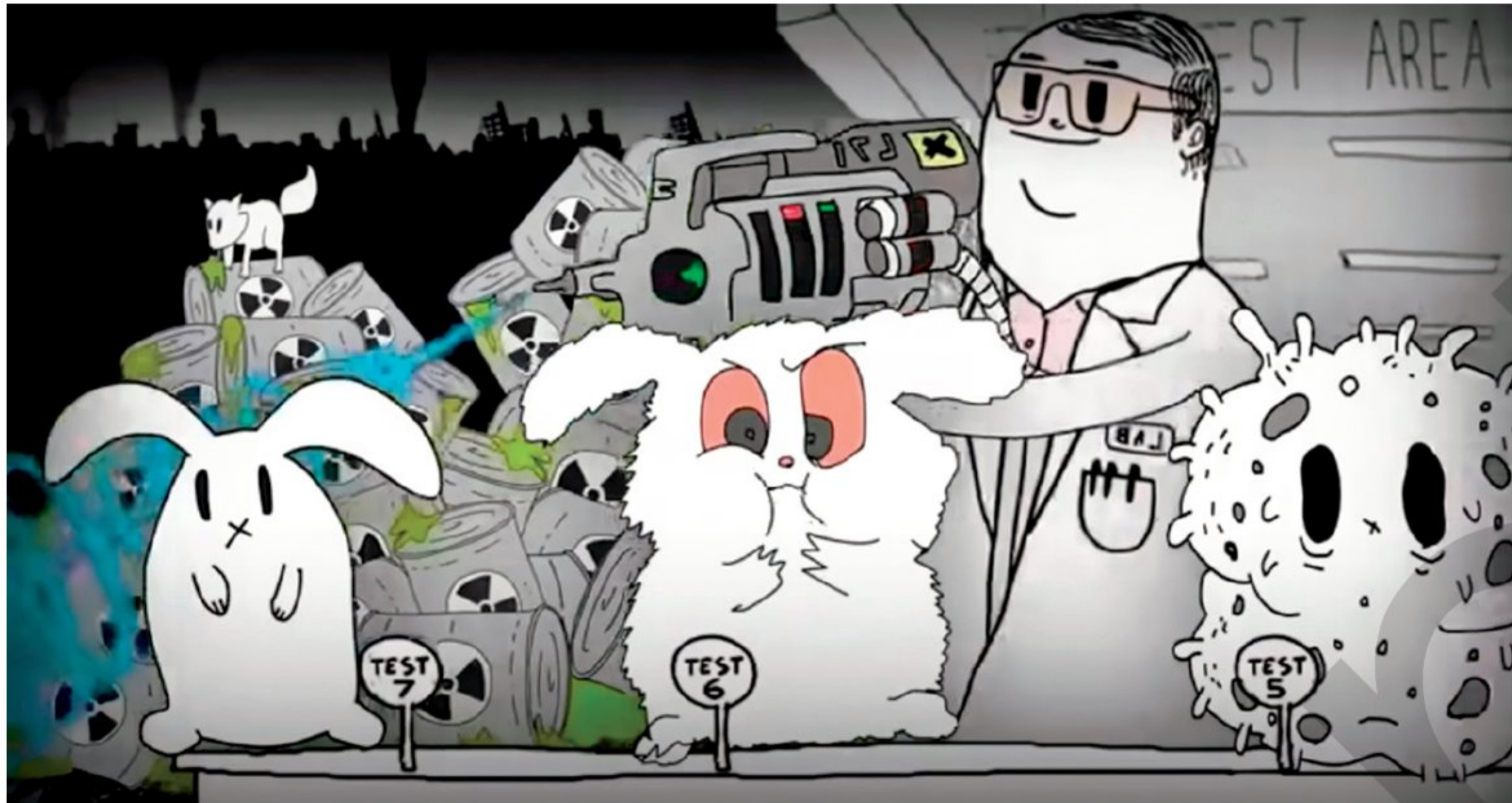
<https://youtu.be/fiMOh0DEUSg>



■ **Figure 9.10** Raising awareness about how diet impact nature

Steve Cutts: Man

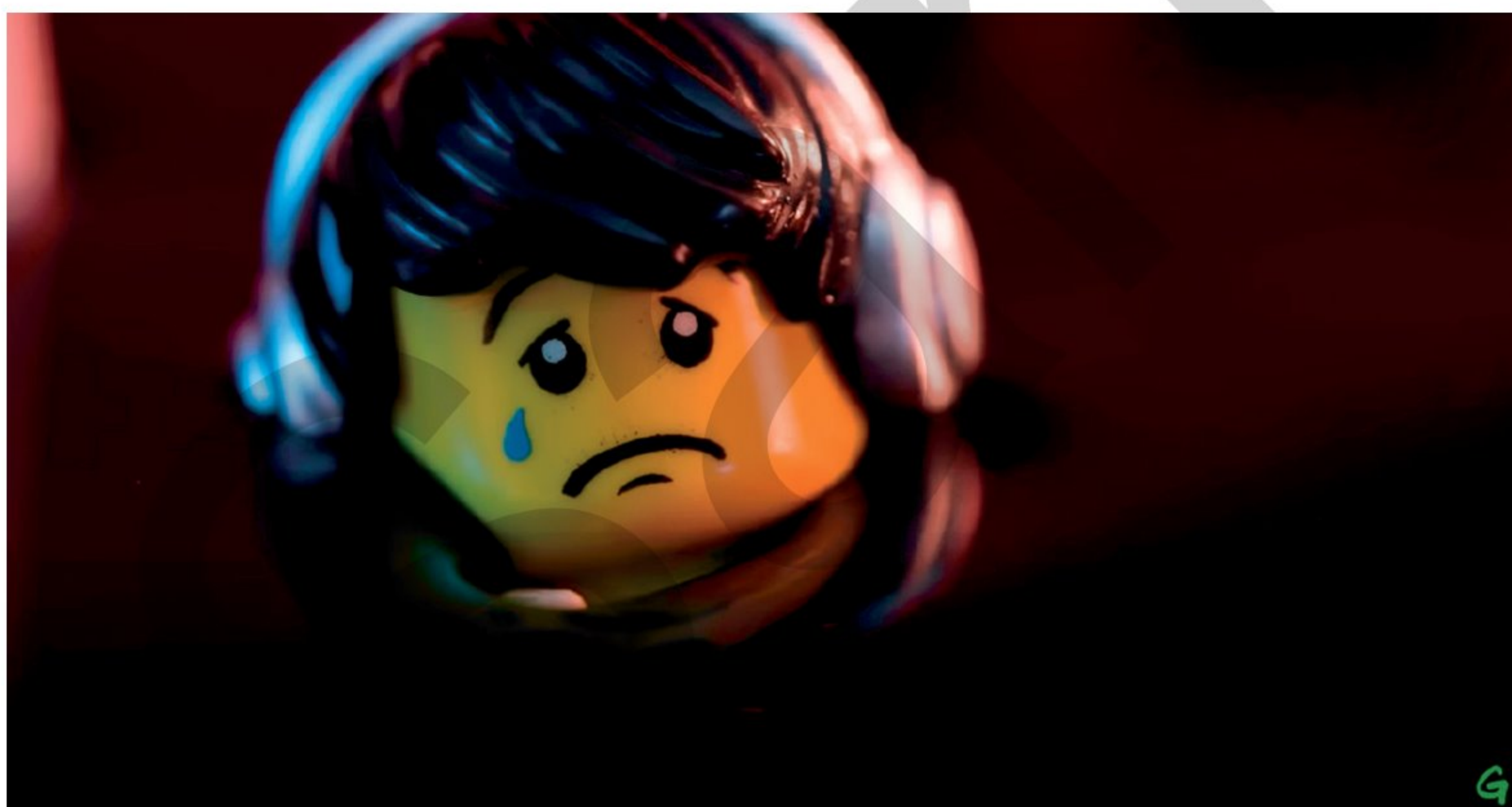
<https://youtu.be/WfGMYdalCIU>



■ **Figure 9.11** Illustrating how humans can negatively impact nature

Greenpeace: Lego: Everything is NOT awesome

https://youtu.be/qhbliUq0_r4



■ **Figure 9.12** A campaign about pollution

UN Environment Programme: Plastic Ocean

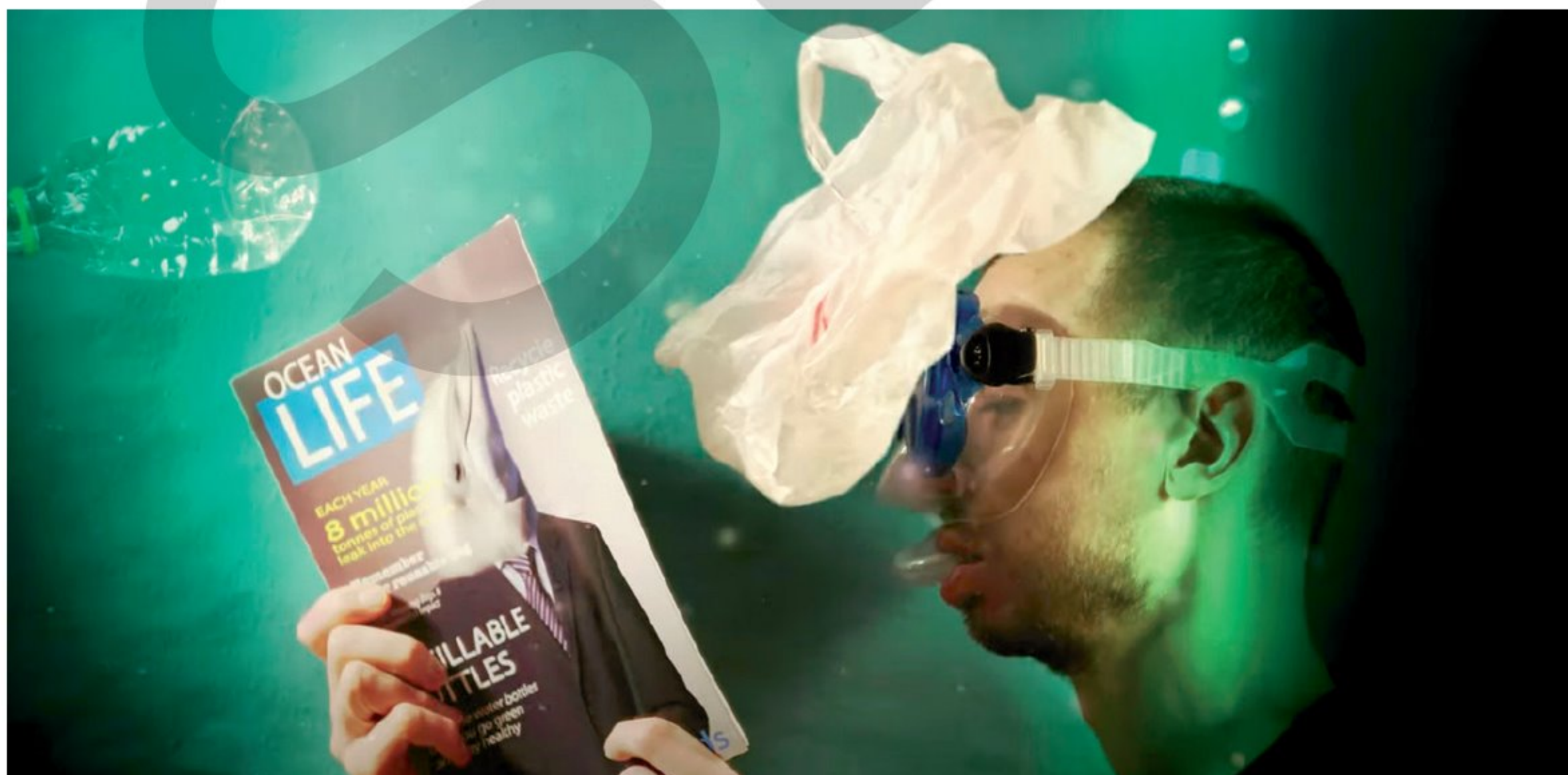
<https://youtu.be/tNCnCEIfnkA>



■ **Figure 9.13** Raising awareness about the effects of the increasing plastic in the ocean

Plastic Ocean International: S.T.O.P. – Stop The Ocean Pollution

<https://youtu.be/xWbzD6T6NpA>



■ **Figure 9.14** A campaign against pollutions of the oceans

AFP News Agency: Deforestation

<https://youtu.be/7ZCpORzNuJl>



■ **Figure 9.15** Explaining the situation we are facing with deforestation

22squared inc.: Unlikely Hero

<https://vimeo.com/194682427>



■ **Figure 9.16** Encouraging everyone that we can play our part to reverse the impact of climate change

DISCUSS

Inquiry question: Factual

Which campaigns have been successful with raising awareness of human impact on the environment?

Inquiry question: Conceptual

How can designers change consumer behaviour?

Of the videos you **analysed**, which campaigns do you think were most successful? What methods did the designers use to try to change consumer behaviour?

SEE-THINK-ME-WE

Want a different way to **analyse** an existing product? Try using the thinking routine See-Think-Me-We. This will help you not only share your observations and thoughts about a video, for example, but make connections to you (as an audience member) and the wider world (your topic).

1 SEE:

Look closely at the work. What do you notice?
Make lots of observations.

2 THINK:

What thoughts do you have about the work?

3 ME:

What connections can you make between you and the work?

4 WE:

How might the work be connected to bigger stories about the world and our place in it?

■ **Figure 9.17** See-Think-Me-We

EXTENSION: OTHER CAMPAIGNS

Although it will be most useful to **analyse** existing videos, you might find inspiration from looking at some other campaigns, such as billboard campaigns, too. Explore more here:

- The 5 most inspiring advertising campaigns that fight plastic pollution: www.cucocreative.co.uk/thoughts/the-5-most-inspiring-advertising-campaigns-that-fight-plastic-pollution
- 22 environmentally focused campaigns: www.trendhunter.com/slideshow/environmentally-focused-campaigns
- 32 Most Creative WWF Ads: www.boredpanda.com/32-most-creative-wwf-ads/?utm_source=google&utm_medium=organic&utm_campaign=organic
- 42 of the most powerful social and environmental ads that will change the way you think: www.demilked.com/social-advertisement-powerful-ads
- AdWeek – Sustainability: www.adweek.com/category/sustainability

Animation studios worth investigating include Aardman Animations, Blue Sky Studios, Cartoon Network Studios, DreamWorks Animation, Illumination, Laika Entertainment, Marvel Animation, Nickelodeon Animation Studio, OLM Inc., Passion Pictures, Pixar, Rough Draft Studios, Sony Pictures Animation, Studio Ghibli, Sunrise Inc., Toei Animation and Walt Disney Animation Studios.

DISCUSS

What type of animation do you want to make?

Discuss your answer with a partner. Give clear reasons and show them examples of similar animations.

ANIMATION SOFTWARE



■ **Figure 9.18** OpenToonz

Unsure of exactly how to make your animation? Ask your design teacher for advice or check out some of these tools: Adobe Animate, Animaker, Animation Desk Blender, FlipaClip, Harmony, Maya, OpenToonz, Pencil2D Animation, Plastic Animation Paper, Powtoon, Stop Motion Studio Stykz, Toontastic 3D, Unity and Vyond.

This list includes tools for different types of animation, and software for Mac, Windows, Linux, iOS and Android. Most tools will have tutorials and guides, but you can also look on YouTube for top tips, tutorials and more. The tools allow for different levels of complexity – make sure to choose something that challenges you, but is viable.

ACTIVITY: Design brief



■ ATL

- Creative-thinking skills: Apply existing knowledge to generate new ideas, products or processes

In your design **brief** you should include the problem you are focusing on, the impact you want to have on the general public, including the behavioural change you want them to make, as well as the animation style you will use. You should **describe** how you will make the animation (including software or materials used).

Make sure to use information from your research. This should include facts to **explain** the problem you are focusing on, information gathered from empathy maps to **explain** how your animation will connect with the general public, and examples of the existing animations/campaigns you are inspired by. You might also include information about your soundtrack, narrative and style.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A iv: Develop a design brief.

ACTIVITY: Design specifications



■ ATL

- Organization skills: Set goals that are challenging and realistic

When writing your **specifications** think about what you can achieve in the time and using the resources available. Although it is important to challenge yourself and set high standards, you must be realistic. Work out what you want to prioritize; for example, maybe you want a beautiful, technically challenging animation, but will have to keep it short. Maybe you want to focus on the story of the animation, so the animation will be longer, but done using a simpler program.

Use the following table to help you write your specifications.

Animation specifications	
Aesthetics	What is the style of your animation?
Animation type	What type of animation are you going to make?
Cost	What is the cost of your animation? Include the cost of any software you use as well as physical resources, such as tripods and cameras.
Function	What is the story of your animation? What is the purpose of the animation? To raise awareness of ... ? To get the general public to ... ?
Length	What is the minimum and maximum length your animation will be?
Target audience	What features will your animation contain that appeal to your target audience?
Tools	What tools will you use? Include any software you use as well as physical resources, such as tripods and cameras.

■ **Table 9.1** Useful terms for animation specifications

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B ii: Develop a design specification.

How can designers change consumer behaviour?

COMMUNICATION

When writing your specifications it is important to be clear and concise. You want to write them so that they are easy to prove. Write them so that they are SMART: specific, measurable, achievable, realistic and timely. Here are some examples of good and bad specifications.

Bad design specification	Good design specification
My animation will be about deforestation.	My animation will include three facts about deforestation.
My animation will make the audience feel sad.	My animation will make at least 80% of the audience feel sad (testing: multiple-choice question in audience survey).
My animation will include music.	My animation will include royalty-free, cinematic music from BenSounds.com.
My animation will be short.	My animation will be between 30 and 60 seconds.

Table 9.2 Bad versus good design specifications

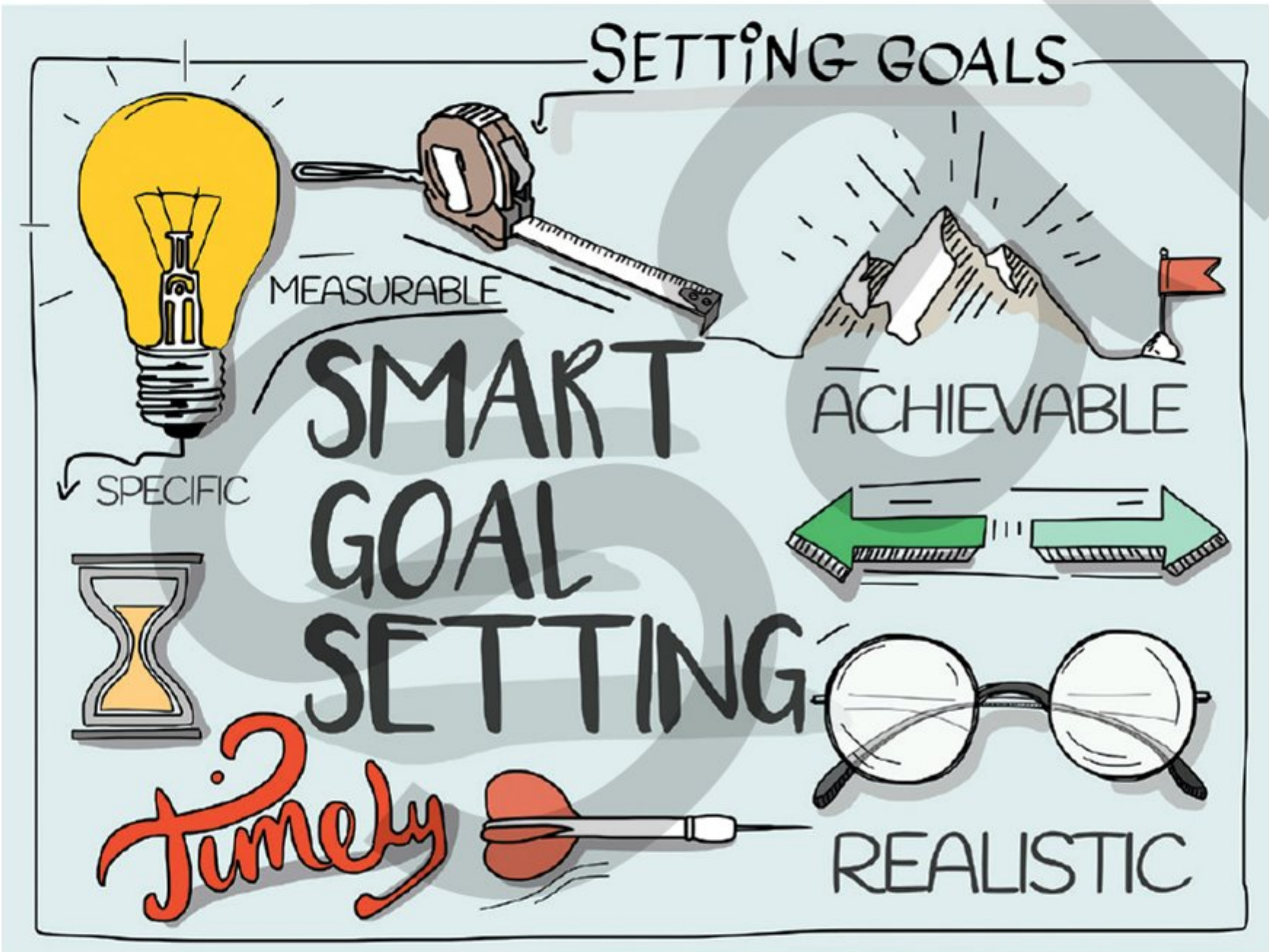


Figure 9.19 Setting goals



Figure 9.20 You can easily find printable storyboard templates online or create your own

ACTIVITY: Storyboarding

■ ATL

- Communication skills: Interpret and use effectively modes of non-verbal communication

No matter what type of animation you are making, you should create storyboards before you begin. Make sure they show all the key parts of the story of your animation. Each part should have an image, with a short piece of text. If you have facts or music that you want to add to your video, make sure the storyboard shows when. They should communicate your ideas clearly, almost like telling a story through a comic strip. **Create** several, showing different ideas or variations on one idea and gather **feedback** from your classmates.

If you are designing your own characters or logo, you should also experiment with different ideas for these before committing to a final design.

Gather feedback from your classmates and assess your ideas against your specification. Use this information to **explain** which idea will be used to **create** your final animation.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B i: Develop design ideas and B iii: Present and justify the chosen design.

ACTIVITY: Detailed storyboard

■ ATL

- Communication skills: Organize and depict information logically

Before you start making your final animation, you need to make a final storyboard. This should be more detailed, clearly showing the composition of key parts of your story. In the space below each sketch, you should add additional details, including the timing of each section, as well as how you will **create** it.

You should also include the script. This might be characters talking, a voice-over or text on screen. Imagine that you were working on a feature-length animation with a big team of animators – your storyboard should be detailed enough for everyone to know what the final product should look like.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B iv: Develop planning sketches and C i: Construct a logical plan.

WATCH

Watch AlanBeckerTutorials' video on the 12 principles of animation and see which you will be able to apply in your animation.

<https://youtu.be/uDqjldI4bF4>

After watching the video, you might want to go back and watch some of the animations you **analysed** to see which principles they used. Alternatively, watch some short animations online, like Pixar Shorts, and see if you can **identify** any in use.

ANIMATION PRINCIPLES

Famous Disney animators Ollie Johnston and Frank Thomas, who produced *Pinocchio*, *Bambi*, *Cinderella*, *Peter Pan* and more, introduced Disney's 12 principles of animation. The principles are used to make the animation more realistic and use the basic laws of physics, as well as engaging features used to bring emotion into the animation.

The principles are:

- | | |
|--|------------------------|
| 1 squash and stretch | 6 slow in and slow out |
| 2 anticipation | 7 arc |
| 3 staging | 8 secondary action |
| 4 straight ahead action and pose to pose | 9 timing |
| 5 follow through and overlapping action | 10 exaggeration |
| | 11 solid drawing |
| | 12 appeal. |

EXTENSION

Learn more about Ollie Johnston and Frank Thomas here:

<https://frankandollie.com>

Want to learn more? Check out these books:

- *The Animator's Survival Kit* by Richard Williams
- *They Drew as They Pleased* (series) by Didier Ghez
- *The Illusion of Life: Disney Animation* by Ollie Johnston and Frank Thomas
- *Walt Disney's Nine Old Men & The Art Of Animation* by Robin Allan

ACTIVITY: My principled animation

■ ATL

- Transfer skills: Combine knowledge, understanding and skills to create products or solutions

As you **create** your animation, take screenshots or photos. Annotate them to show the different animation principles you have used. When doing this write the principle used along with how you did it and the effect it is intended to have on the audience. Does it meet its purpose? You should also annotate any other technical skills you used, including anything particular to the type of the software you used. You can also be critical and show where your technical skills were lacking, describing what you had hoped to do.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion C ii: Demonstrate technical skills.

ACTIVITY: Animation premiere

■ ATL

- Communication skills: Share ideas with multiple audiences using a variety of digital environments and media

When you have finished your animation, you will most likely show it to your teachers and classmates. However, it is worth thinking about how you can get your animation to a wider audience. If your video is hosted on a public site such as YouTube or Vimeo, make sure you name it appropriately and use tags to make it easy to find. You might include tags linked to the topic of your video, as well as related charities and organizations. For example, #climate #climatechange #climateaction #greenpeace.

Apart from just hosting your video online, you might decide to share it publicly, promoting it on social media sites like Twitter and Instagram. You might also decide to send it directly to people you think might be interested. This could include family and friends but you could also send it to charities and organizations interested in or linked to your topic.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion C iii: Follow the plan to create a solution.

ACTIVITY: Storyboard vs. my animation

■ ATL

- Affective skills: Practise dealing with change

To show how clearly you followed your plan, put screenshots from your animation alongside your storyboard. You could also **create** a video showing the storyboard and your animation side by side.

Clearly **justify** any changes made, explaining your reasons – which might be technical, timing or impact related. **Explain** if changes improved or hindered your design. Did you choose to make the changes or were you forced to? How did these changes impact the overall animation?

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion C iv: Justify changes made to the plan.

Should information shared about human impact on the environment be purely factual?

ACTIVITY: Audience feedback

■ ATL

- Collaboration skills: Listen actively to other perspectives and ideas

Just like every design project, you should be able to test and then prove that you met many of your design specifications. Many of your specifications, such as the length of the video, might be proved through simple observation, so should not take too much time or effort.

The most important aspect of this project is to prove that you are educating your target audience about your topic, that you encouraged them to consider or change a behaviour you have identified as damaging to the environment.

As your animation is aimed at a large target audience (the general public), instead of just a small group or individual, it is important to get feedback from lots of people, so you should **create** a survey. Think about the best way to get the survey out to as many people as possible. You could have a link to the survey in the video

description, for example. You will want to make sure the survey is not too difficult and won't take too long to fill in. You can do this by asking mostly multiple-choice questions or questions that require only one-word answers. You should have at least one open question where you gather comments from the audience.

Lastly, think about how you will be able to judge what your target audience has learnt and if their behaviour has changed. This might mean that you ask some questions before they have watched the video. To do this, you could even have the video in the middle of the survey: they are asked questions about their knowledge of a topic and behaviours, then they watch a video, then reflect on new knowledge and potential changes to behaviour. Alternatively, you might want to survey people a short time after watching the video. Do they still remember your key message a week after watching the video? Did they actually change their behaviour?

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion D i: Develop testing methods.

ACTIVITY: 'Be The Change' submission

■ ATL

■ Critical-thinking skills: Interpret data

Now imagine you are submitting your video to the 'Be The Change' competition. The video submission must be a slide deck and should include the following sections:

- A title slide, with the name of your animation and the topic you are addressing.
- A slide to **explain** why you chose that topic and what behaviour you want the audience to change.
- A slide with the video embedded.
- At least one slide showing the success and the video's impact based on your survey results and other testing measures. This should show how you educated the audience, their behavioural changes and some positive comments from the survey.
- Lastly, a slide to **describe** the impact your animation could have if it reached a wider audience (if you win the 'Be The Change' competition).

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion D ii: Evaluate the success of a solution and D iv: Explain the impact of the solution.

DISCUSS

Your animation, along with the animations you **analysed**, contain some factual information, but has also used creative methods to have an emotional impact on the audience, to capture their attention and engage them with your topic. Some might argue that this is manipulative.

With a partner discuss:

Should information shared about human impact on the environment be purely factual? Why/Why not?

EXTENSION

Want to learn more about animation and strengthen your skills? Try the 'Pixar in a Box' course, developed by Pixar, available on Khan Academy. You can also find courses focusing on using different software on skills websites, including Udemy and Lynda.

Want to learn more about the impact Disney made on the world of animation? Research [Disney's Nine Old Men](#).

Lastly, if animation interests you, speak to your school's college/careers counsellor about summer programmes, internship and college options.

! Take action

- ! Take action by continuing to share your animation and advocate for change. Consider if there are changes your classmates or your school could make to lessen their impact on the environment. Consider starting a club, running an event or speaking in an assembly. You could also work with your school leadership to make bigger changes, such as meat-free Mondays or only using recycled paper.
- ! Consider entering your animation into a competition. Check out the UN's Young Champions of the Earth awards at www.unep.org/youngchampions
- ! Take a look at the following websites for more ideas on taking action:
 - ◆ Climate Generation: www.climategen.org/take-action/act-climate-change/take-action
 - ◆ Fridays for Future: <https://fridaysforfuture.org/take-action>
 - ◆ Greenpeace: www.greenpeace.org/usa/take-action
 - ◆ Climate Action: <https://takeclimateaction.uk>

Reflection

In this chapter we found out about different ways humans are negatively impacting the environment. We looked at the different ways designers are raising awareness of these problems. We then created a product to inspire positive behavioural change, to lessen our negative impact on the world around us.

Use this table to reflect on your own learning in this chapter.					
Questions we asked	Answers we found	Any further questions now?			
Factual: Which human activities most negatively impact the environment? Which campaigns have been successful with raising awareness of human impact on the environment?					
Conceptual: How can designers change consumer behaviour?					
Debatable: Should information shared about human impact on the environment be purely factual?					
Approaches to Learning you used in this chapter:	Description – what new skills did you learn?	How well did you master the skills?			
		Novice	Learner	Practitioner	Expert
Communication skills					
Collaboration skills					
Organization skills					
Reflection skills					
Information literacy skills					
Critical-thinking skills					
Creative-thinking skills					
Learner profile attribute(s)	Reflect on the importance of being a thinker for your learning in this chapter.				
Thinker					

10

How can play help us learn?

- Communicating through play can better help us understand historical perspectives.

CONSIDER THESE QUESTIONS:

Factual:

What games are educational? Whose story is not told in history books? What moments in history are worth learning about?

Conceptual:

How can we learn through gaming? How can play help us remember? Who creates history?

Debatable:

Are some topics too serious for play? Can anything be taught through an educational game?

Now **share** and **compare** your thoughts and ideas with your partner or with the whole class.

KEY WORDS

indie game

sprites



Figure 10.1 How can we learn through gaming?

IN THIS CHAPTER, WE WILL ...

- find out about the video game industry
- explore how educational games help us learn
- take action by making our own educational history game.

We will reflect on this learner profile attribute:

- Knowledgeable

We will use our knowledge of a historical event or person, along with our design skills, to create our game.



■ These Approaches to Learning (ATL) skills will be useful ...

- Communication skills
- Collaboration skills
- Organization skills
- Reflection skills
- Information literacy skills
- Critical-thinking skills
- Creative-thinking skills

THINK–PAIR–SHARE

What are your favourite video games?

Who are your favourite video game characters?

After discussing your answers with a partner, then the class, check the links below. Do your favourites appear on either of the lists? Were there any games/characters you forgot about that you were glad to see on the lists?

- Top 100 video games of all time: www.ign.com/lists/top-100-games
- Love them or hate them, these are the most influential video characters of all time: www.gamedesigning.org/gaming/characters

◆ Assessment opportunities in this chapter:

- ◆ **Criterion A:** Inquiring and analysing
- ◆ **Criterion B:** Developing ideas
- ◆ **Criterion C:** Creating the solution
- ◆ **Criterion D:** Evaluating

In this chapter you will learn about video game design and the various processes and careers related to creating a game. You will also explore the importance of educational video games and consider how gaming helps us learn. You will pick a historical event or person to **design** an educational game about. Instead of building a full, complex game, you will **describe** your whole game idea and will make some accompanying visual elements. This will allow you to dream big, describing an epic game, but will give you something achievable to work on. As many games are made by a team of people doing different roles, this will allow you to pick a type of gaming career you want to sample.

What games are educational?



■ **Figure 10.2** There are many different careers within the video game industry

CAREERS IN GAME DESIGN

While some games are made by individuals, most are made by a team. Here are some of the careers related to video game design:

- Video game artist – responsible for designing all the visuals, including backgrounds, characters, menu pages and more.
- Video game animator – responsible for combining art and technology to animate the character and other elements in the game.
- Audio engineer/programmer – responsible for designing music and sound effects.
- Narrative writer – writes the story of the game. This includes the game objectives and any dialogue.
- Game programmer – responsible for all the coding that makes the game work. Programmers make the game playable.

Other jobs include producer, tester, lighting designer, 3-D modellers, environmental artists, texture artists, storyboard writers and concept artists.

Games made by individuals

Games that are made by individuals or small groups, not companies, are often called 'indie games'. Indie is short for 'independent'.

- Space Invaders – Tomohiro Nishikado created the entire game. He was the designer, programmer, artist and sound mixer!
- Stardew Valley – Eric Barone created every aspect of this game and used it as a way to improve his own programming and design skills.

Game design studios

Some of the biggest game design companies are Activision Blizzard, Bethesda Game Studios, Electronic Arts, Epic Games, Nintendo and Ubisoft. Next time you play a game you might see the studio name on the loading page.

- www.gamedesigning.org/game-development-studios

DISCUSS: Time needed to create a game

Depending on the complexity of a game it can take a few hours to a few years to develop a game. Even when released, games often have updates and improvements, so are still being worked on by their design team.

Think about the ones you play. How often have you had to download an update?

Game jams

A game jam is when you are given a set amount of time to create a game around a specific theme. These can be done either online or in person. People usually form small, informal teams, often made of groups of strangers. Imagine on a Friday the clock starts and the theme is released; a team forms, they brainstorm, plan, create and have a small game completed by the Sunday! Most game jams are run as a competition and usually last from 24 to 72 hours.

Find out more about game jams:

- <https://eledris.com/game-jams>
- <https://globalgamejam.org>
- www.indiegamejams.com
- <https://itch.io/jams>
- <https://onehourgamejam.com>

Design situation

A large video game studio has decided to branch out into the world of educational games. They've noticed that there are many science and math games available, but not many on history. They have therefore decided their first game will have a historical focus. They are accepting proposals for historical games and will choose one to fully develop. They want it to focus on an untold story in history and it should involve a team of designers, including artists, programmers and sound designers.

The proposal should include:

- Working title: What do you want the game to be called?
- Historical focus: What is the era, which event will it focus on?
- Purpose: What do you want players to learn?
- Story summary: What is the story exploring?
- Genre: What type of game is it?
- Target audience: Who do you want to play?
- Game play: How do you play?
- References/competitors: What games have inspired you? What similar games exist?
- Unique selling point (USP): What makes your game unique?

Include at least one of the following visual elements:

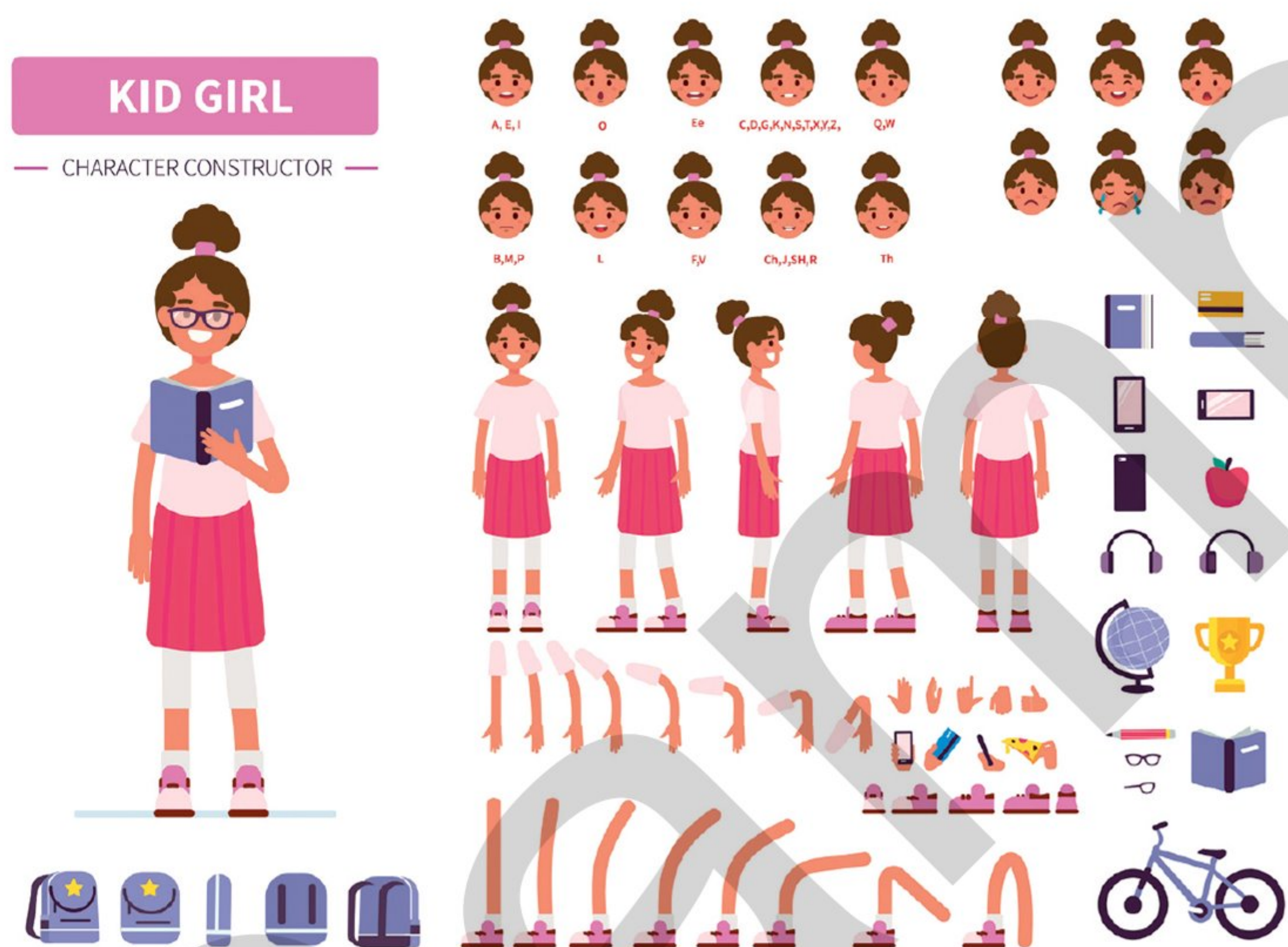
- Animation: An animation to play at the start, to link scenes or appear while the game is loading.
- Background art: Digital illustration showing the background.
- Character model: 2-D or 3-D character model.
- **Colour palette**: A selection of colours you will use and why (this should be positioned next to some artwork for the game).
- Demo level: One level or section of the game. This should be testable/playable.
- Map: A map might show the journey a character takes in one level or how all the different levels connect.
- Sprite sheet: A page showing different elements of a character or object that can be animated.
- Misc: Other visual elements such as the menu page, game options, score board, etc.

Note: As a design student your focus will be on creating the visual elements. This is what you will spend the most time on and how you will show your design skills. You will go through the design cycle focusing on the visual element you are creating.

You can work in a small team for this project, although you will each go through the design cycle and produce your own visual elements. Collaboration will happen with the other features of the pitch.



■ **Figure 10.3** An example of video game background art



■ **Figure 10.4** A sprite sheet showing all the different elements needed to animate the character



■ **Figure 10.5** Some other visual elements you might include

Whose story is not told in history books?

- The 50 most amazing moments of the 20th century:
www.independent.co.uk/news/world/world-history/top-50-moments-20-century-martin-luther-king-rosa-parks-history-a8942141.html
- 80 moments that shaped the world:
www.britishcouncil.org/sites/default/files/80-moments-report.pdf
- The British Museum curated 'The History of the World in 100 objects'. Do any of the objects link to the events on the timeline. Which objects would you add or remove?:
www.bbc.co.uk/ahistoryoftheworld/about/british-museum-objects

DISCUSS

Choose five key moments in history and write them each on a piece of paper. Everyone in the class should put their notes up in order to form a timeline. As a class discuss the following questions:

- Were there any events picked by several people?
- Were there any events you had not heard of before?
- What countries did the events take place in? Were any countries represented a lot more than others?
- Were there any key moments in history you were surprised not to see on the timeline?

ACTIVITY: Timelines

■ ATL

- Communication skills: Interpret and use effectively modes of non-verbal communication

Sometimes expressing ideas visually is much more effective than delivering information through text. A timeline can help you understand the order of events and the scale/time between the events.

Check out:

- The World History timeline from the Library of Congress:
www.wdl.org/en/sets/world-history/timeline
- Histography – Where every dot is a historical event from Wikipedia:
<https://histography.io>

Can you change your timeline so it only shows images, instead of text naming/describing the events?

- Inspiration: Ten moments that changed history – in pictures:
www.theguardian.com/culture/gallery/2012/sep/15/ten-history-moments-andrew-marr

You could even produce a timeline showcasing important games, consoles and changes in gaming technology.

- www.gamedesigning.org/gaming/history

DISCUSS: Inquiry questions

Reflecting on your timeline, answer the following two questions:

- Whose story is not told in history?
- What moments in history are worth learning about?

You might need to do some research before answering. You might use your answer to choose the theme of your game.

What moments in history are worth learning about?

ACTIVITY: My game's focus

■ ATL

- Information literacy skills: Access information to be informed and inform others

'Those who cannot remember the past are condemned to repeat it.'

(George Santayana, philosopher, essayist, poet and novelist)

Describe the historical event/era/person you want your game to focus on. **Explain** the importance of the event and **justify** why an educational game should be made about it. Focus on what your players can learn from it.

How will this **impact** them today? Use your answers from the activities to help you.

Your justification should include some key facts about your game's focus. Make sure you use different sources to gather information. You might also want to **explain** why you think your focus is meaningful and important.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A i: Explain and justify the need.

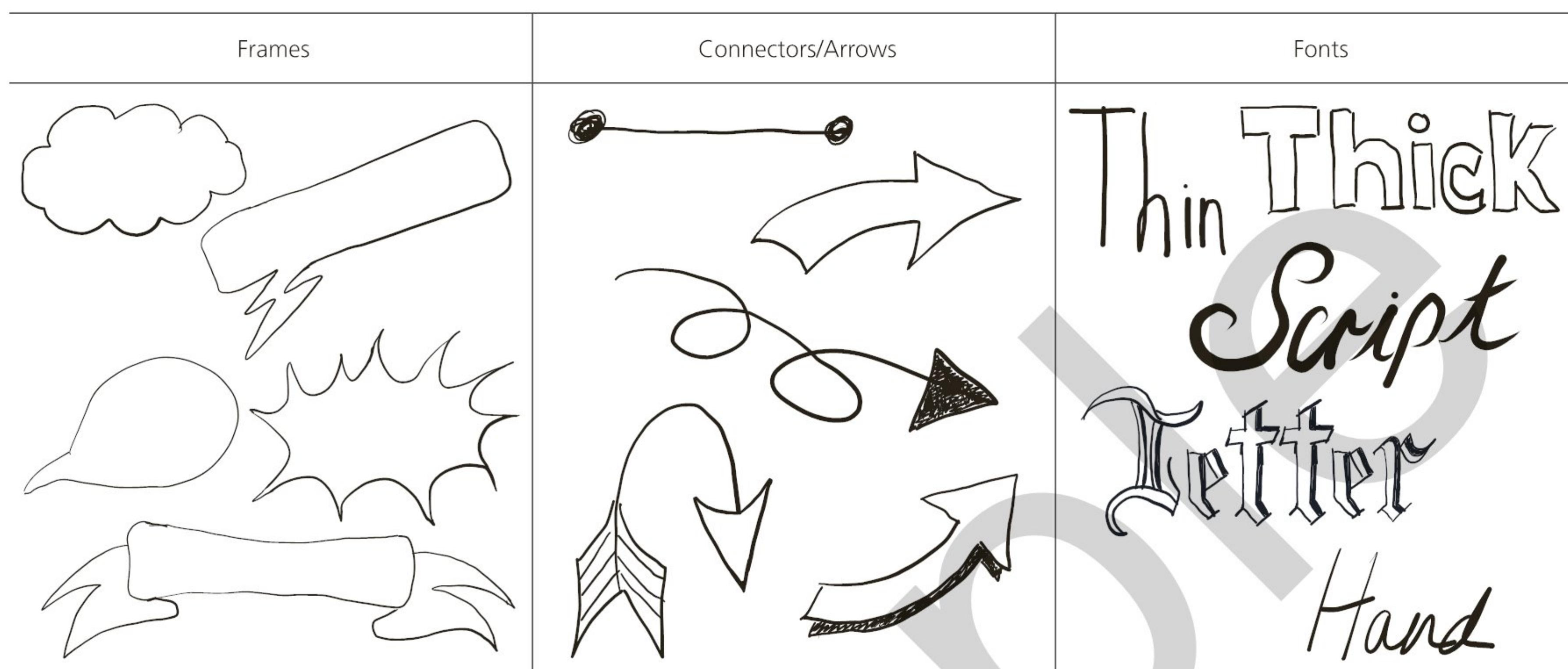
COMMUNICATION: SKETCHNOTING

Sketchnoting, sometimes called 'visual notetaking', is a great way of recording information and reflections in a quick and visual way. This is useful when attending lectures, watching long videos or events and when reading long text – draw quick sketches to highlight the key pieces of information in the source you are reviewing.

Another benefit is that if you are making a visual product, sketchnoting will help you get initial visual ideas. You don't have to be a master artist to be able to sketchnote. You just need to use simple shapes to help you organize your thoughts. Shapes include frames, speech/thought bubbles, symbol connectors, fonts and arrows.

WATCH

- What is sketchnoting:
www.verbaltovisual.com/what-is-sketchnoting
- RSA ANIMATE: Changing education paradigms (an example of a video made using sketchnoting):
<https://youtu.be/zDZFcDGpL4U>
- 10 tips to get started with sketchnoting workshop:
<http://langwitches.org/blog/2015/11/15/10-tips-to-get-started-with-sketchnoting-workshop>



■ **Figure 10.6** Some basic shapes to get you started with sketchnoting



■ **Figure 10.7** Some sketchnoting tips to get you started

What games are educational?

ACTIVITY: Game of facts

■ ATL

- Information literacy skills: Collect, record and verify data

There are many popular games sold for entertainment purposes that use historical settings, for example the Assassin's Creed series. However, as these are entertainment they don't have to be factually accurate. You are designing an educational product, so it will have to be factually accurate.

Come up with a **list** of all the questions you want to answer before you start designing your game. You should be looking for key dates, names and places. When finding the answers to your questions, check multiple sources to confirm that the information you have is accurate.

To get additional information for your video game, watch some videos about your historical focus. Use sketchnoting to help record key pieces of information you will include in your game.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A ii: Identify and prioritize the research.

DISCUSS: Game genres

How many different game genres do you know? Work with a partner to **list** as many as you can. Then as a class come up with a complete list by sharing your ideas.

Some genres to get you started: adventure, puzzle, RPG (role-playing game) and sports.

Can you think of examples for all the categories you have come up with? You might want to look at where you buy games (app store, for example). Often they are organized by genre or category.

ACTIVITY: Existing educational games

■ ATL

- Information literacy skills: Collect and analyse data to identify solutions and make informed decisions

Now it's time to **analyse** existing educational games. **Describe** what you like and don't like about the games you **analyse**, and which inspire you about what to and what not to include in your game.

Think about the different elements of the proposal you are going to submit later and use those elements to analyse the existing games: title, focus*, purpose of the game, story, genre, audience, game play, USP and, of course, you must **analyse** some visual elements of the games. For each game you **analyse**, you should test it by playing the game. You should also take screenshots of the game which you can then annotate.

You might want to see if the game comes with other features that help it to be educational, such as being able to play the game in another text, changing the language difficulty, providing descriptions of key words and even teacher support material.

*You don't have to **analyse** only historical educational games. You might choose to **analyse** games that teach about other topics, such as math or science games.

You can **analyse** the example games on pages 234–5.

Other games you might want to look up include Quandary Game, Oregon Trail, Prodigy Game and Valiant Hearts.

You can also find more games here:

- www.changegamer.ca/games--activities.html
- <https://learninggamesnetwork.org/microsites/soul>
- www.brainpop.com/games/game-finder
- www.mission-us.org
- www.icivics.org/games
- <https://pbskids.org/games>

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A iii: Analyse existing products.

Argument Wars

www.icivics.org/games/argument-wars

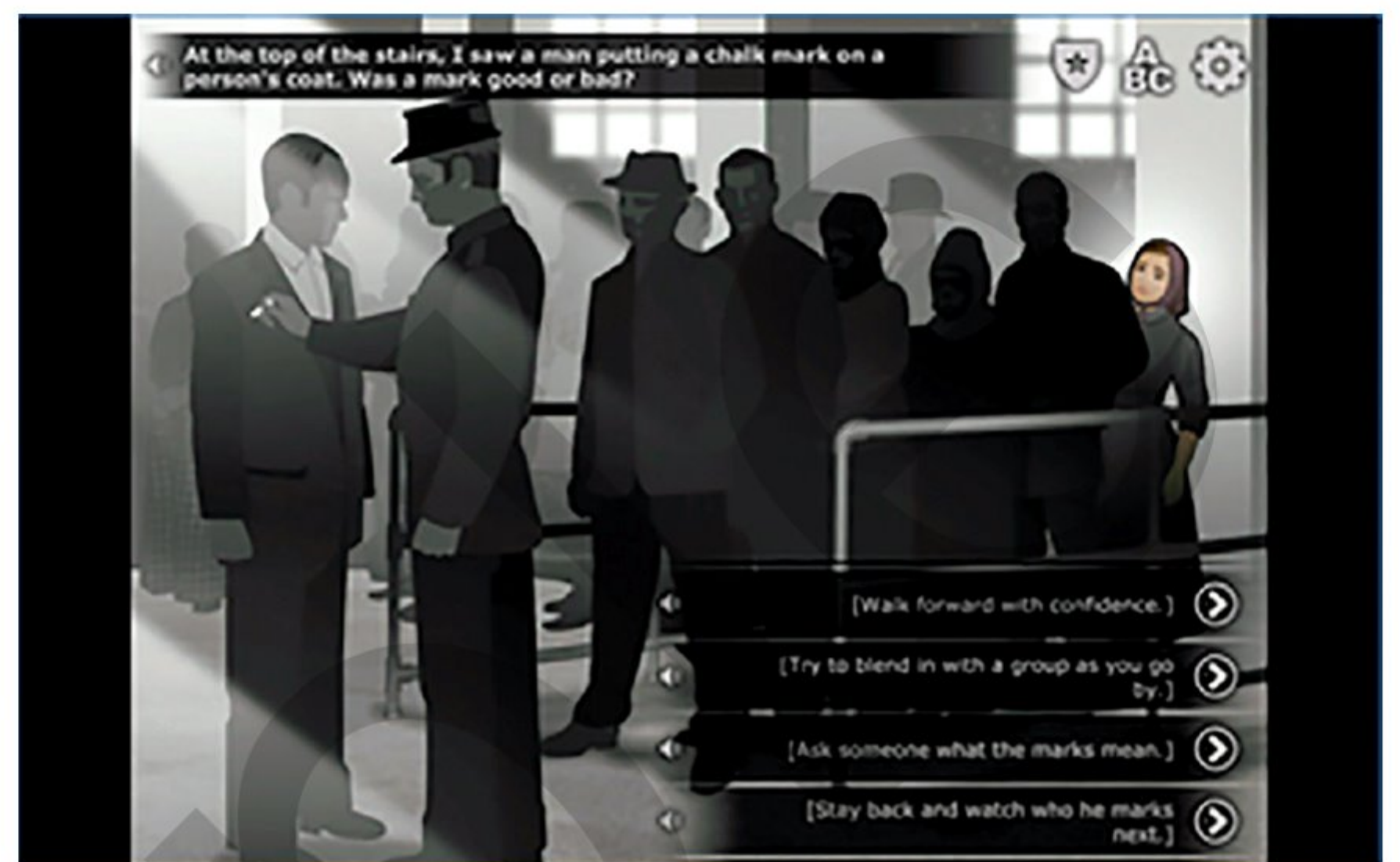


■ **Figure 10.8** Get the chance to debate in historic cases

Created by iCivics. Test your persuasive abilities while fighting in real Supreme Court cases, such as Brown v. Board of Education, which focuses on the desegregation of public schools in America.

City of Immigrants

www.mission-us.org/games/city-of-immigrants

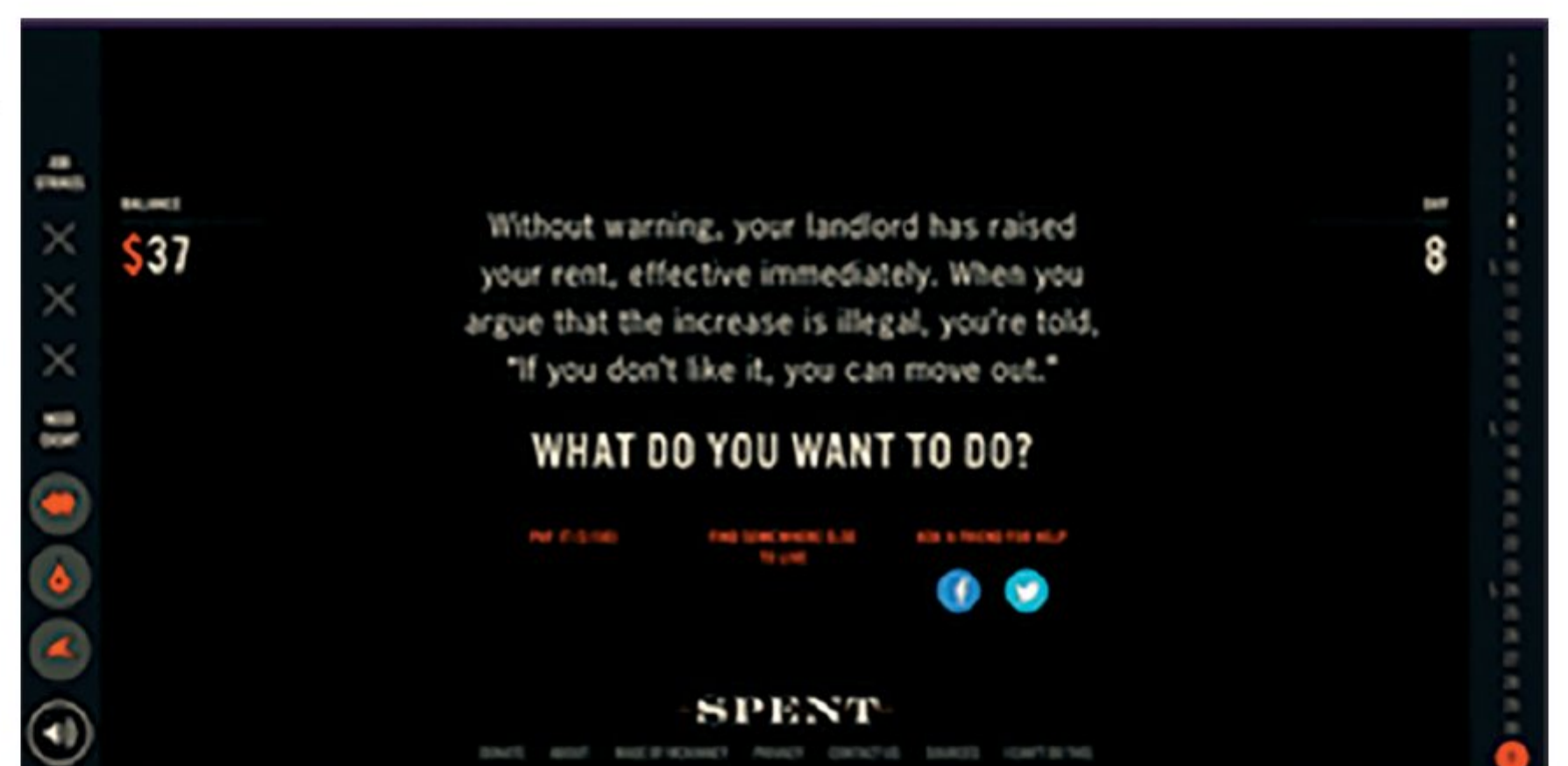


■ **Figure 10.9** Learn through virtually experiencing the life of an immigrant

One of the Mission US games. Take on the role of a 14-year-old Jewish immigrant from Russia as they start their new life in America.

Spent

<http://playspent.org>



■ **Figure 10.10** Gain an insight into a life in poverty

Play this game to understand the struggles of living in poverty in America.

3rd World Farmer

<https://3rdworldfarmer.org>

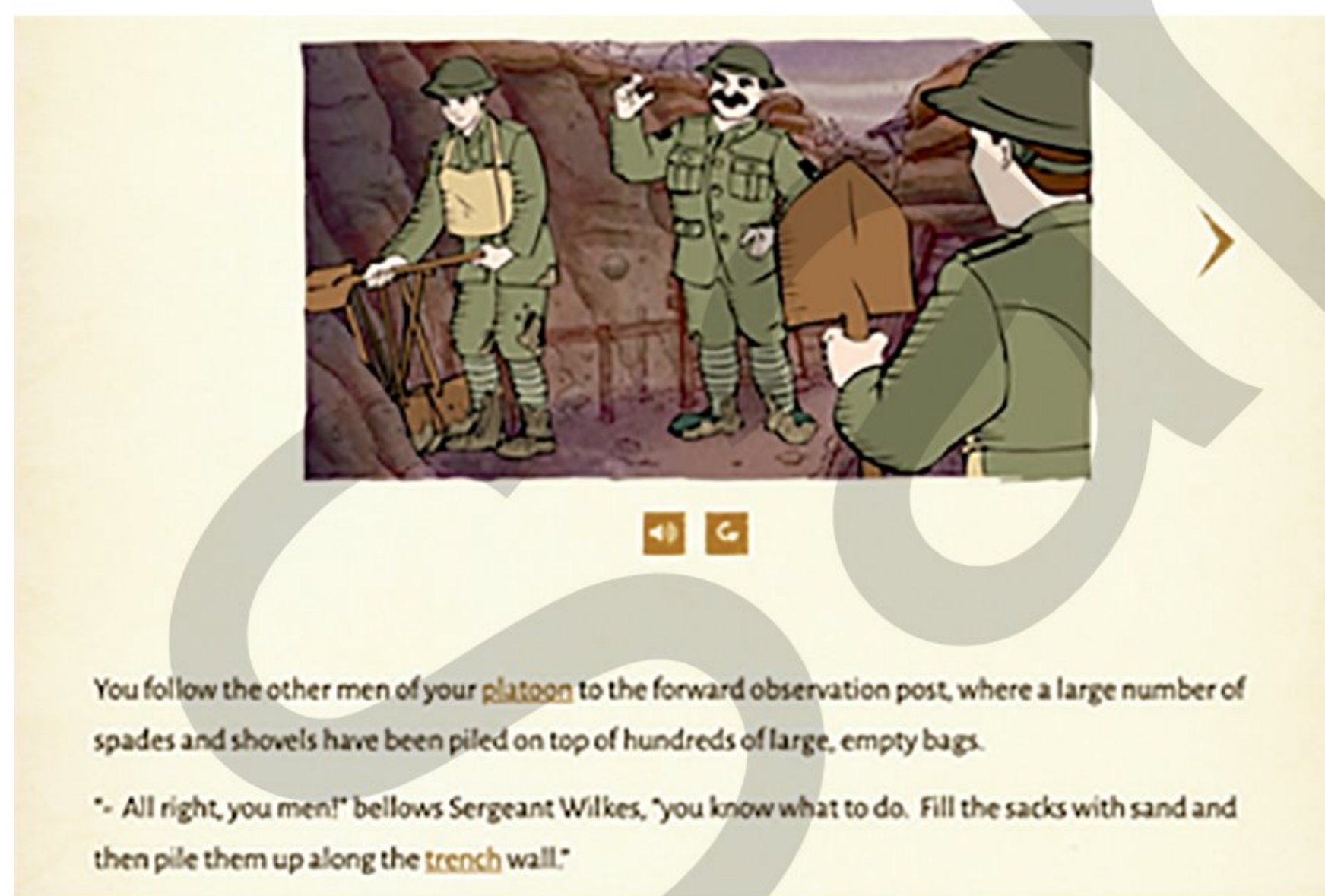


■ **Figure 10.11** Take on the challenges farmers may face

Take on the role of a farmer in Africa, dealing with struggles linked to poverty and conflict, such as a bad harvest and civil war.

Over the Top

www.warmuseum.ca/overthetop

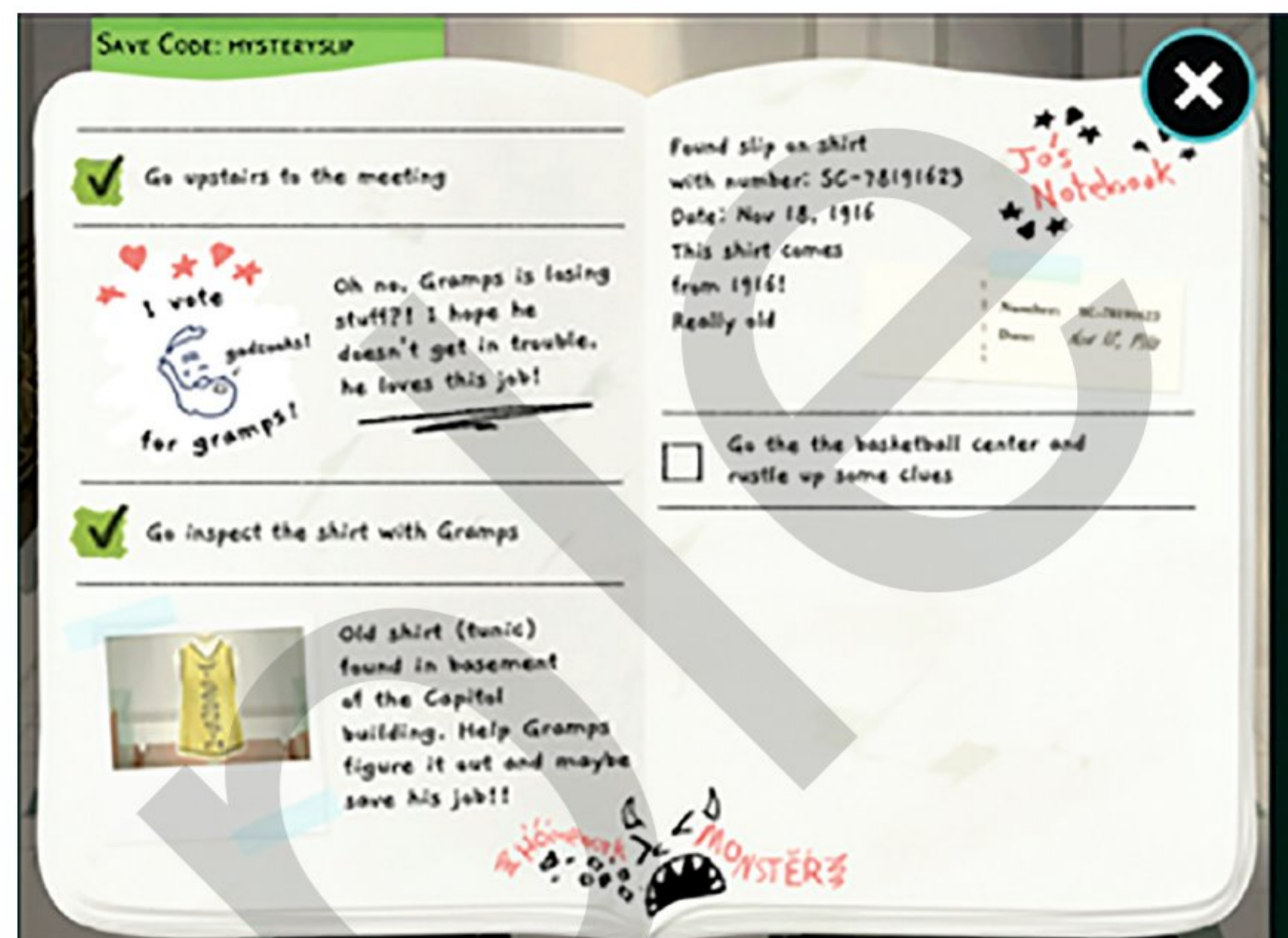


■ **Figure 10.12** See life in the trenches from a different perspective

A game created by the Canadian War Museum. This game allows you to experience life in the trenches during the First World War.

Jo Wilder and the Capitol Case

<https://www3.pbswisconsineducation.org/CapitolCase>



■ **Figure 10.13** Have the opportunity to learn from artefacts

Play this game to learn about the history of Wisconsin, through looking at real artefacts from the Capitol's collection.

EXTENSION

After making your list, you might want to look at the following websites to see if you missed any:

- If your life were a video game, which genre would it be?: www.gamedesigning.org/gaming/video-game-genres
- List of video game genres: https://en.wikipedia.org/wiki/List_of_video_game_genres
- The many different types of video games and their subgenres: www.idtech.com/blog/different-types-of-video-game-genres

How can we learn through gaming?

COLOUR PALETTES

Look at the colours of the games you have **analysed**. Why do you think the designers chose those colours? Maybe they suit the time the game was set. Maybe they create an emotional impact on the player. Maybe they attract the player's attention. What do the colours communicate to the players?

It's also worth noting that older games consoles only had the ability to show certain colours, so game palettes were made from those options. This is often why retro games have similar colours.

When you are creating your design it might be worth choosing a **colour palette** with only a few colours to simplify the process. It will also be easier to **explain** your colour selection.



■ **Figure 10.14** Colour palettes

Find out more about the importance of colours in a game and how to create colour palettes here:

- 15 cyberpunk colour palettes for dystopian designs: <https://blog.depositphotos.com/15-cyberpunk-color-palettes-for-dystopian-designs.html>
- Best colour palette generators for game design: www.buildbox.com/best-color-palette-generators
- Retro game colour palettes and tools: <https://stuartspixelgames.com/2018/07/15/retro-game-colour-palettes-and-tools>
- The super fast colour schemes generator! This generator also allows you to see how the colours would be viewed by people with different types of colour blindness: <https://coolors.co>
- YouTube: The beauty of colour – Can colour influence us?: <https://youtu.be/z67OKKsZljg>

MYP Design 1–3 contains more information about colour theory. You may want to refer to this when **analysing** and selecting colours.

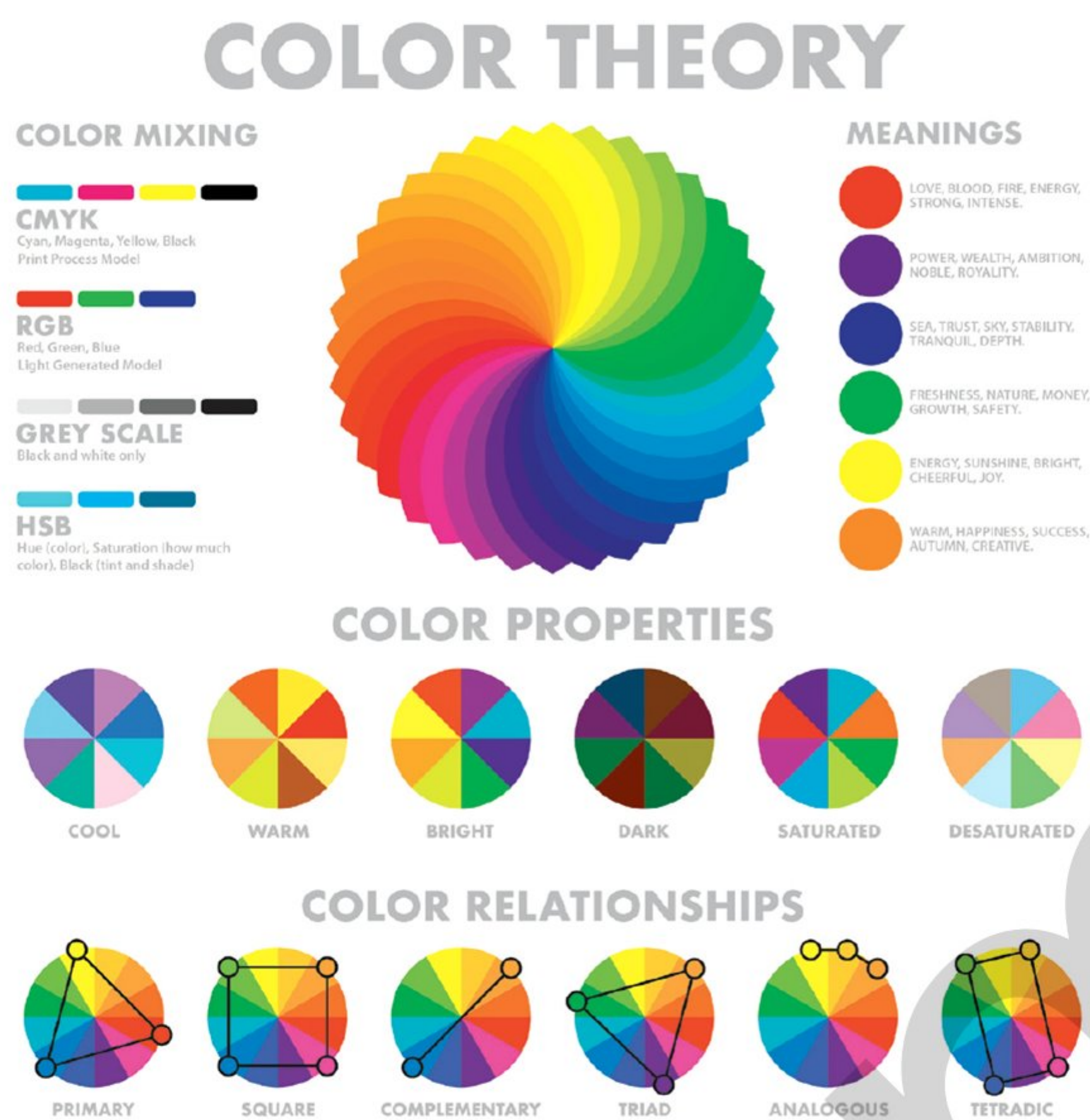


Figure 10.15 You can use colour theory to help you to analyse colours in existing games and to select colours for your game

THINK–PAIR–SHARE

Now that you have tested a range of educational games, consider the following two questions:

- How can we learn through gaming?
- How can play help us remember?

Share your answer with a classmate, then share your thoughts with the rest of the class.

LEARNING THROUGH PLAY

Write a headline to **describe** why you think play is important for learning. You can use the following quotes for inspiration:

‘Play is the highest form of research.’

Albert Einstein

‘Play is often talked about as if it were a relief from serious learning. But for children, play is serious learning.’

Fred Rogers

‘Play is our brain’s favourite way of learning.’

Diane Ackerman

DISCUSS

Games are supposed to be fun, but some of the educational games listed earlier in the chapter cover a range of serious issues, including poverty, immigration and war. Does tackling big issues through games make them seem less important or is it a good way to approach these topics? Are there any topics so serious that making a game about them would be inappropriate or offensive?

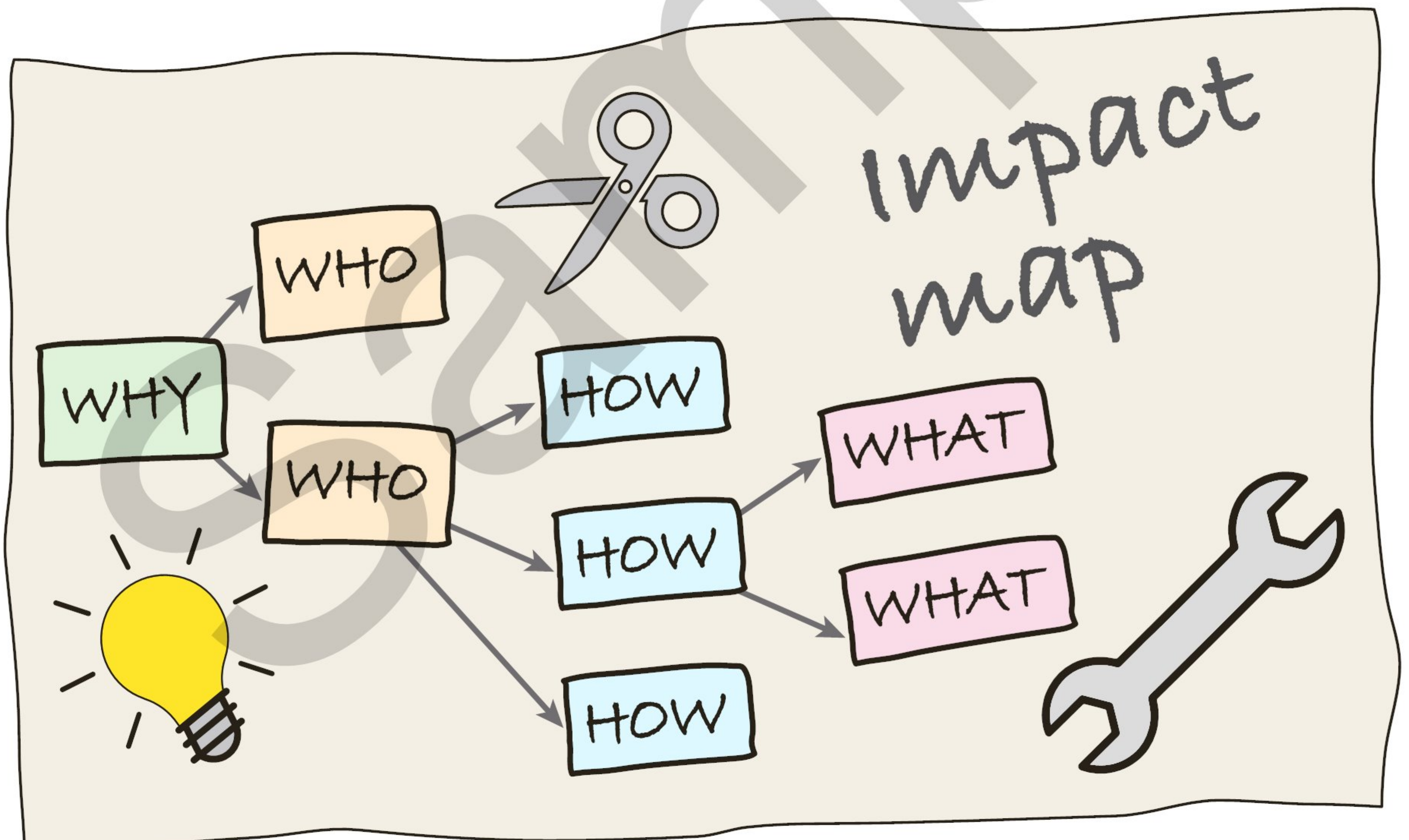
Can anything be taught through an educational game?

IMPACT MAPPING

Designers and other companies often use **impact mapping** to help them plan their products and solutions. Impact mapping is used to connect the main goal of the product, who it will impact, how it will impact them and what needs to be done to reach the main goal.

Creating an impact map for your game may help you to bring your initial ideas together.

- **Why:** The goal. What is the desired impact of the game? To teach the player about ... ?
- **Who:** Who will be impacted by your game? (Probably teachers and students/players.)
- **How:** How will the game change the player's understanding of your topic?
- **What:** What will happen in your game that will help you achieve your goal?



■ **Figure 10.16** Example of an impact map

ACTIVITY: Design brief

■ ATL

- Communication skills: Paraphrase accurately and concisely

Use your impact map to help you write a design **brief** for your game. Your brief should include:

- non-visual elements of the game that you will include in your proposal
- the working title
- historical focus
- purpose of the game
- story summary
- genre
- target audience
- game play
- references/competitors
- unique selling point.

However, instead of the full proposal, which you might submit as a long document or slideshow, you should write your design brief as a paragraph, where you paraphrase the key features concisely.

The second part of your design brief should go into more detail about the visual element(s) you will **create** for this project. This might include:

- an animation
- background art
- character model
- colour palette
- demo level
- map
- sprite sheet
- other visual elements.

Describe what you will make and how you will make it.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A iv: Develop a design brief.

GAME DESIGN TIPS

Game designers share tips and tricks online through videos and websites. Online you will be able to find video tutorials and articles to learn how to use various software as well as resources with tips for successful video game design. Use these resources to help you with your design, just as real game designers do. One day you might even decide to give back by creating your own videos and articles to support other designers!

Some resources you might want to look at:

- 10 game design tips for new developers:
<https://unity.com/how-to/beginner/10-game-design-tips-new-developers>
- 10 tips for building a better game:
www.creativebloq.com/inspiration/10-tips-building-better-game-5126304
- 20 Indie dev tips for awesome game design:
www.buildbox.com/20-tips-for-awesome-game-design
- 51 game design tips! (in 8 minutes): https://youtu.be/5ijuH_oMu-U
- We compiled a mega-list of tutorials in game design:
www.gamedesigning.org/learn/tutorials

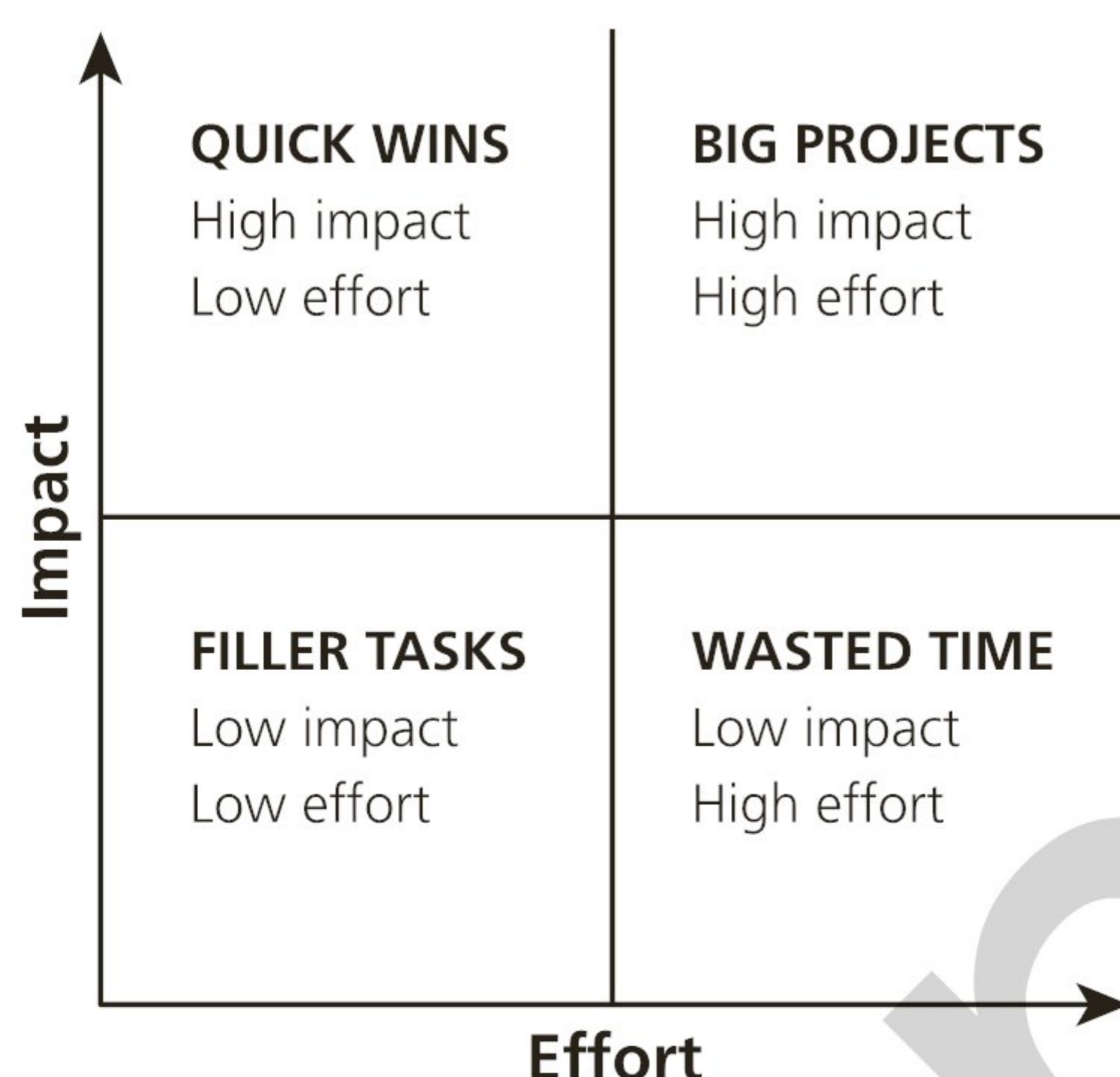
When you have picked the software you will use for your design, you may want to look up support online. Search **[software name] tips**.



ACTIVITY: Priority matrix

■ ATL

- Organization skills: Set goals that are challenging and realistic



■ **Figure 10.17** Example priority matrix

Use a priority matrix to help you set your goals for the visual elements of your project. Remember that a minimum is producing just one of the visual elements, so you might like to make two, three or more! Using a priority matrix can help you set an achievable goal.

Make a **list** of all the things you would like to do. As you make this list, you might imagine all the visual elements your final game will have. The matrix will help you prioritize and decide which visual element you will make for the proposal.

Examples of some of the items you might see on a list for a Victorian game, set in London, England: Background art for London street scene, 3-D character model of Queen Victoria, animated introduction to the game, menu range set by a tavern, game map of London

showing different levels set along the Thames river, sprite page for the player's character.

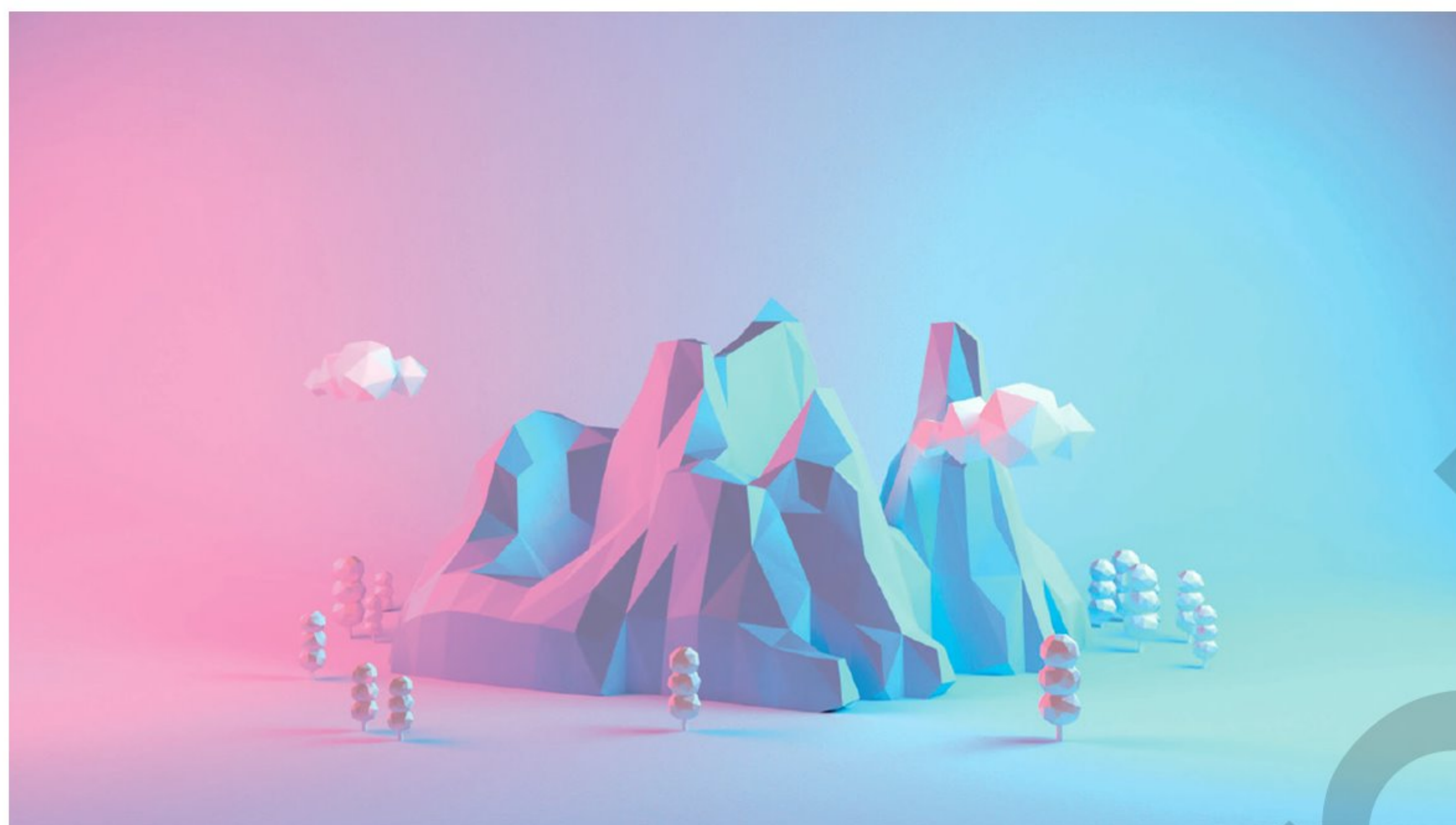
Place each element from your list on to the priority matrix. You should focus on making something that has a high impact. You might then pick out some additional visuals you will make, if time allows, that are high impact, but low effort.

- **Quick wins:** This task has a high impact and does not require too much effort or time. You should do this.
- **Big projects:** This element would be amazing but might not be achievable. Can you break this down into smaller elements or simplify the idea?
- **Filler tasks:** These are quick visuals you can make for your game. Alone they would not make much impact but can be good when accompanying a higher impact element.
- **Wasted time:** These elements would take a lot of effort but would not be very impressive for your proposal – abandon these.

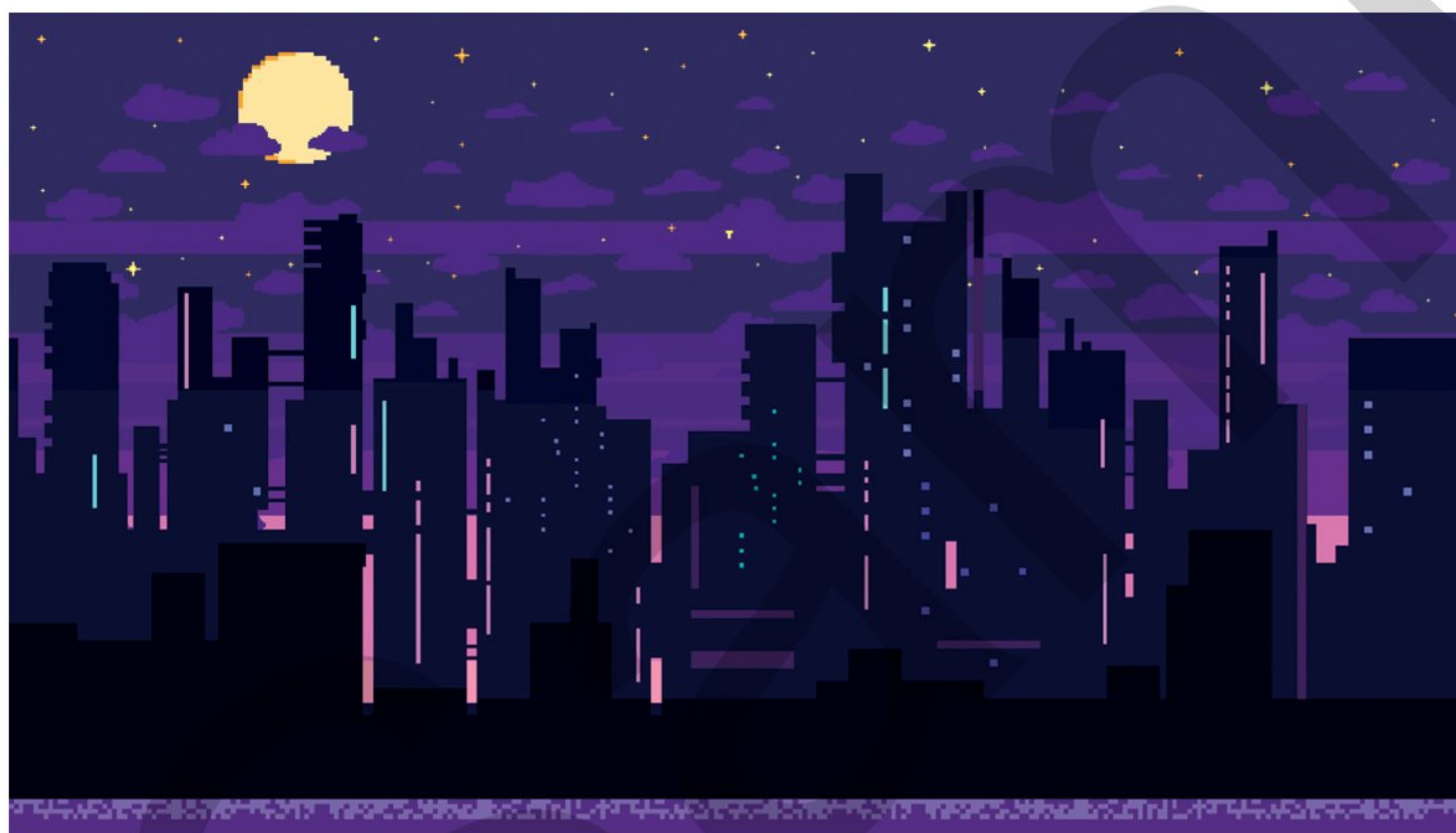
Once you've picked out the visual element(s) you will make, write your specifications to show how you will be successful. Many of the **specifications** will be linked to the game's **aesthetics**, but others might link to how the game is created for your target audience. You might include specifications linked to colour, texture, style, genre of your graphics, desirability, visual link to the era the game is set in, difficulty and, of course, the purpose or function. **Create** the specifications in a way you are familiar with, in a table for example, but add levels of priority. Which things does your game need to achieve to be successful and which things are just nice to have?

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B ii: Develop a design specification.



■ **Figure 10.18** Example of low poly video game art



■ **Figure 10.19** Example of pixel video game art

SEARCH

Search **low poly video game**, **low poly art**, **pixel art**, or **pixel video games** to see more examples.

- Learn more on Wikipedia:
https://en.wikipedia.org/wiki/Low_poly
https://en.wikipedia.org/wiki/Pixel_art

KEEP IT SIMPLE

As much as it would be wonderful to make a super realistic game, where the graphics look photo real and all movement is smooth, it may not be achievable with your current technical skills or timescale. Consider making low poly for a 3-D game, or pixel art for a 2-D game.

- Low poly: 3-D computer graphics that use small amounts of polygons to make shapes.
- Pixel art: images are created using pixels.

While both these styles were once used for necessity and are still useful for keeping file sizes down and making games easy to load, they are now often chosen for stylistic reasons. Both low poly and pixel art can be used to make video game backgrounds, characters and other elements, and can be done quickly and easily.

ACTIVITY: Exploring different ideas

■ ATL

- Creative-thinking skills: Use brainstorming and visual diagrams to generate new ideas and inquiries

Before you start making your visual elements digitally, draw them by hand. This will help you explore and **develop** different ideas. When you move to making your work digitally, you can use these drawings as a visual guide.

Depending on the type of element you are making you might be drawing visuals, creating storyboards or even experimenting with different colours.

Create a range of visual sketches with annotations so that you can gather **feedback** before moving on with creating your elements digitally.

At this point your sketches should be rough and do not need to have too much detail. They should express your initial ideas only.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B i: Develop design ideas.



■ Figure 10.20 Initial character sketches

ACTIVITY: Gathering feedback

■ ATL

- Collaboration skills: Listen actively to other perspectives and ideas

For this project you probably have easy access to your target audience: students and teachers. If you are making your game for a younger audience, you might have access if your school has a primary school section or you might be able to interview your classmates or their younger siblings.

It might be worth getting feedback from individuals and societies or a history teacher in your school. Alternatively, there might be an online forum where you can get feedback from people who are interested in that time period. You might also get feedback on the visual elements from a design or art teacher or from other game designers online.

Make sure you think about how many of your specifications your sketches fit. Which ideas would work best to fulfil your overall game? Which designs will look best in your proposal?

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B iii: Present and justify the chosen design.

EXTENSION

- Game Design YouTube channel: www.gamedesigning.org/gaming/helpful-youtube-channels

EXTENSION

Unsure of what tools to use to make your visuals? Explore the following resources:

- Armory3d: A game engine that allows you to integrate Blender
- Blender: Software for creating 3-D graphics, including models and animations
- Construct 3: A browser-based 2-D game editor
- Daz Studio: Tool for making 3-D characters
- Game Salad: A game maker that uses no coding
- Game Star Mechanic: Create platform-based games
- GameFroot: A browser-based 2-D game maker, aimed at school students, which utilizes block coding
- GameMaker: Allows you to do everything from artwork to programming
- Godot: Game engine that allows you to make 2-D and 3-D games
- Krita: Open-source software for concept art
- Lospec: A tool for making pixel art
- Make Human: Tool for making 3-D characters
- Mixamo: A beginner's tool for making 3-D characters
- Piskel: An online editor for animated sprites and pixel art
- Pixil Art: A tool for making pixel art
- RPG Maker MV: Allows you to make role-playing games (RPGs)
- Twine: Create choice-based games using HTML, CSS and/or Javascript
- Unity: A game engine used by many professionals
- Unreal Engine: A game engine for 3-D game creation

All of these tools are free or have a free trial or free educational version.

EISENHOWER MATRIX

	URGENT	NOT URGENT
IMPORTANT	DO THIS NOW	DO THIS LATER
NOT IMPORTANT	DELEGATE THIS	DELETE THIS

■ **Figure 10.21** The Eisenhower Matrix helps you organize the order you should complete tasks in

Earlier on you used a priority matrix to pick which products you should make. You can now use something similar. The Eisenhower Matrix helps to order the tasks you need to make the final proposal. It is useful when you have a project with lots of different elements, for example completing the proposal document and making your visual elements. It's very useful if you are working on a project with a team, have a short time to finish something, or you are working on a long-term project with lots of different elements.

ACTIVITY: Next steps

- ATL
 - Organization skills: Plan short- and long-term assignments; meet deadlines

Make a step-by-step plan to show how you will make your visual elements. As you might be making multiple visual elements and need to also complete the proposal itself, you might want to use an Eisenhower Matrix to help you order these tasks. For the individual elements you will still need to write a step-by-step plan, which you might put alongside your original sketches.

Make sure you include the time spent on each task. If you are using a new tool, you might want to experiment with it or watch tutorials first, then **create** your plan.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion C i: Construct a logical plan.

ACTIVITY: The proposal



■ ATL

- Communication skills: Organize and depict information logically

You now need to make your actual proposal. This might be a long document or a slideshow. The proposal should show off the technical skills you have used to **create** the visual elements. You should include screenshots or short videos. You might even choose to use your original sketches to show your progress.

Go back to the Design situation panel on page 226 to check the proposal's requirements.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion C ii: Demonstrate technical skills and C iii: Follow the plan to create a solution.

ACTIVITY: A successful proposal?

■ ATL

- Critical-thinking skills: Revise understanding based on new information and evidence

You should share your proposal with your classmates. Afterwards gather feedback to find out what they liked, disliked, how to improve the proposal and whether it is likely to be successful or not. **Create** a survey to gather your feedback. You should also collect comments directly after delivering the proposal.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion D i: Develop testing methods, D ii: Evaluate the success of a solution and D iii: Explain how to improve the solution.

ACTIVITY: My game's impact

■ ATL

- Creative-thinking skills: Make guesses, ask 'what if' questions and generate testable hypotheses

Imagine that your proposal has been accepted and your final product is completed. What impact would you expect your game to have? What valuable lesson would your players learn? Remember to link back to why your historical focus is important.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion D iv: Explain the impact of the solution.

EXTENSION

Continue to improve your game design skills by continuing to create them. You might do an online course, watch more tutorials or even take part in a game jam. You might decide to become an expert coder, animator or video game artist.

Learn more about video game design by watching 'The World According to Jeff Goldblum', Season 1, Episode 6 or the Crash Course YouTube series about games.

Read these two books recommended by Game Designing:

- *The Art of Game Design* by Jessie Schell
- *The Ultimate Guide to Video Game Writing and Design* by Flint Dille and John Zurr

! Take action

- ! Take action through starting a game design club at your school or even running your very own game jam!

Reflection

In this chapter we found out about the video game industry. We explored how different games help us learn. We took action through making our own educational history game.

Use this table to reflect on your own learning in this chapter.					
Questions we asked	Answers we found	Any further questions now?			
Factual: What games are educational? Whose story is not told in history books? What moments in history are worth learning about?					
Conceptual: How can we learn through gaming? How can play help us remember? Who creates history?					
Debatable: Are some topics too serious for play? Can anything be taught through an educational game?					
Approaches to Learning you used in this chapter:	Description – what new skills did you learn?	How well did you master the skills?			
		Novice	Learner	Practitioner	Expert
Communication skills					
Collaboration skills					
Organization skills					
Reflection skills					
Information literacy skills					
Critical-thinking skills					
Creative-thinking skills					
Learner profile attribute(s)	Reflect on the importance of being knowledgeable for your learning in this chapter.				
Knowledgeable					

11

How can we design something to help people deal with change?

- **Systems** and **products** can be created to help members of our **community** deal with **change**.

CONSIDER THESE QUESTIONS:

Factual:

What is transition? What moments of transition are members of our community going through? What are the stages of culture shock?

Conceptual:

Why can change feel uncomfortable?

Debatable:

How can we decide when change is good for us, and when it may not be?

Now **share** and **compare** your thoughts and ideas with your partner or with the whole class.

KEY WORDS

culture shock transition
multimodal



■ **Figure 11.1** Why can change feel uncomfortable?

○ IN THIS CHAPTER, WE WILL ...

- **find out** how change affects members of our community
- **explore** how our schools are supporting our community through this change
- **take action** by creating resources to support people going through a transition.

● We will reflect on this learner profile attribute:

● Caring

We will show empathy, compassion and respect while exploring how people feel as they go through a transition. We will listen to the perspective of others and will strive to make a positive difference for people going through big changes.



■ These Approaches to Learning (ATL) skills will be useful ...

- Communication skills
- Collaboration skills
- Organization skills
- Reflection skills
- Information literacy skills
- Critical-thinking skills
- Creative-thinking skills

◆ Assessment opportunities in this chapter:

- ◆ **Criterion A:** Inquiring and analysing
- ◆ **Criterion B:** Developing ideas
- ◆ **Criterion C:** Creating the solution
- ◆ **Criterion D:** Evaluating

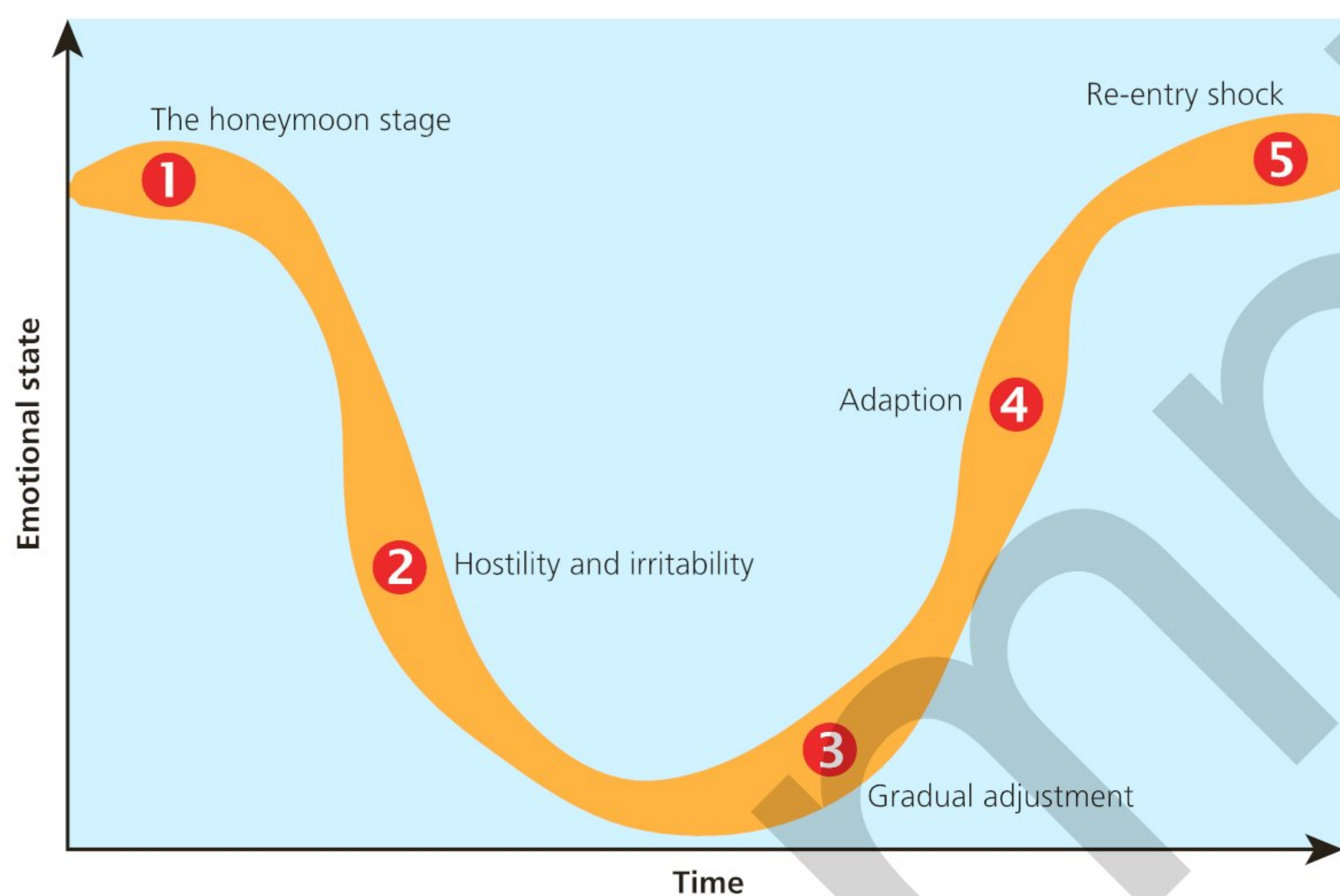
DISCUSS

What big moments of change have you gone through? Did you experience culture shock? **Describe** how you went through the stages to a classmate.

The Greek philosopher Heraclitus, who focuses on the important role change plays in our lives, said: 'Everything changes and nothing stands still.' He has also been attributed to the quote: 'Change is the only constant.' Everyone will go through moments of transition in their lives, many of which are out of their control. While change gives us of many opportunities it can also be difficult or scary.

There are many people going through transitions in our immediate community and our school. This could include moving from primary school to secondary school or moving from a different city or country. Change affects all members of our community, including students, parents, teachers and other staff members. In this chapter we will use empathy to help us understand how people are feeling as they go through these changes and we will **create** resources to help them with their transitions.

What is transition?



■ **Figure 11.2** Culture shock curve

CULTURE SHOCK

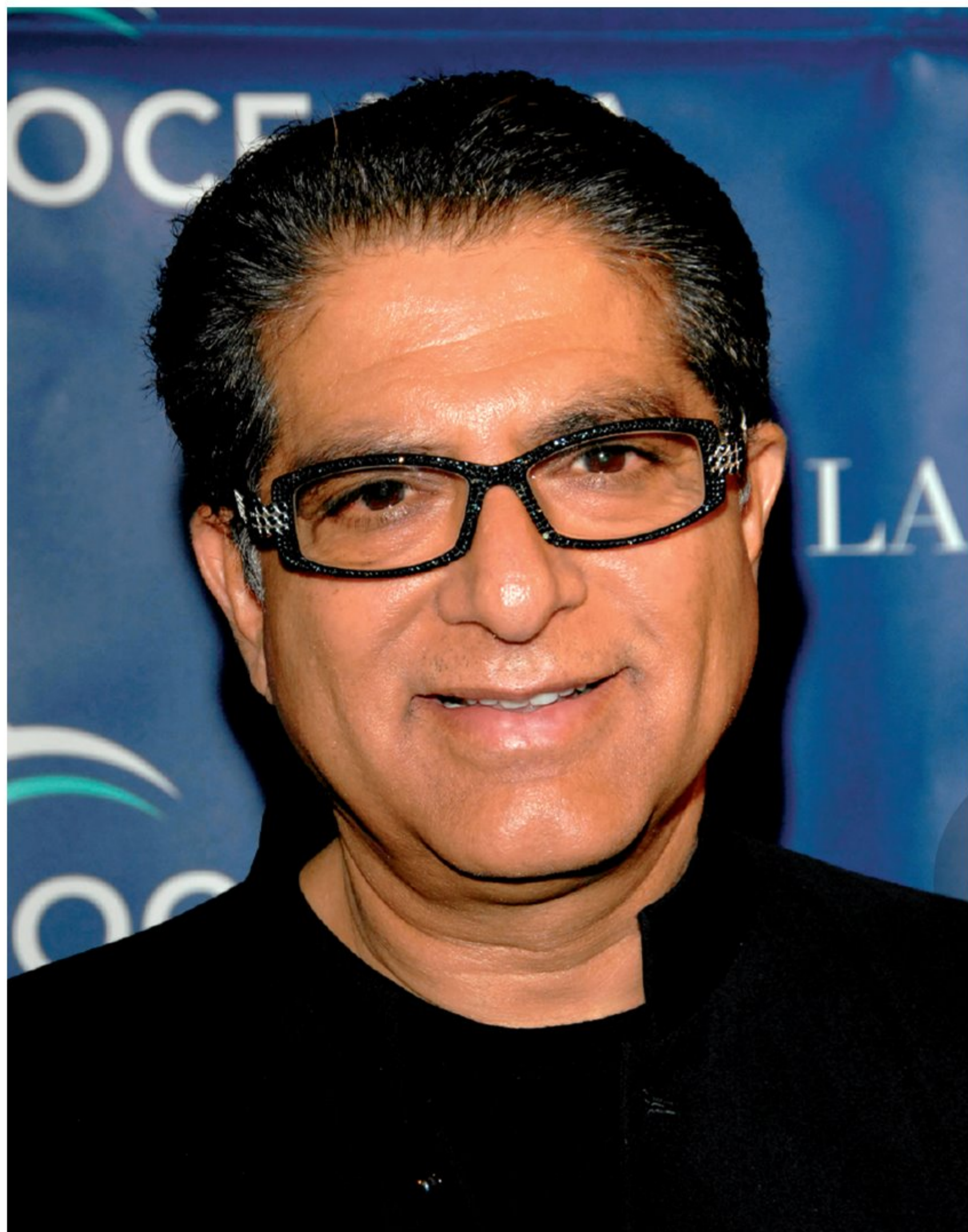
Culture shock is usually thought of as something that happens when you travel or move abroad, but it can happen whenever we experience a big change. Kalervo Oberg first proposed a culture shock model, which included four stages: honeymoon, negotiation, adjustment and adaptation. This five-step model has an added phase, which shows the shock you feel when you return to a previously familiar stage. The five main phases of culture shock are:

- 1 The Honeymoon Stage:** Everything is fantastic. You are excited about everything.
Example: When moving from primary to secondary you are excited about the new freedoms and responsibilities you have.
- 2 Hostility and irritability:** You've started to get frustrated and notice things you don't like about your new situation. You miss the old situation.

Example: When moving from primary to secondary, you miss the playground, your teachers and having less homework.

- 3 Gradual adjustment:** Although you are still getting used to your new world, things are getting easier and you know what is expected of you.
Example: You now know where all your classes are, all your teachers' names and how you are expected to behave in class.
- 4 Adaptation:** You are settled and now this is your new norm.
Example: You now feel like a proper secondary school student. You no longer feel 'new'.
- 5 Re-entry shock:** You've gone back to your old situation and are surprised to experience culture shock there.
Example: You have gone to visit your primary school teachers and are shocked to be treated like a primary school student again.

DISCUSS



■ **Figure 11.3** Deepak Chopra

Look at the following quotes and pick out one or two that resonate with you. **Describe** why you have picked out the quote(s). At the end of this unit come back to the quotes and see if a different one resonates with you then:

- 'We spend our time searching for security and hate it when we get it.' John Steinbeck (Author)

- 'All great changes are preceded by chaos.' Deepak Chopra (Author)
- 'The only way to make sense out of change is to plunge into it, move with it, and join the dance.' Alan Watts (Philosopher)
- 'The changes we dread most may contain our salvation.' Barbara Kingsolver (Author)
- 'It is not the strongest of the species that survive, nor the most intelligent, but the one most responsive to change.' Charles Darwin (Naturalist)
- 'Progress is impossible without change, and those who cannot change their minds cannot change anything.' George Bernard Shaw (Playwright)
- 'To exist is to change, to change is to mature, to mature is to go on creating oneself endlessly.' Henri Bergson (French philosopher)
- 'When in doubt, choose change.' Lily Leung (Actress)
- 'True life is lived when tiny changes occur.' Leo Tolstoy (Author)
- 'Change is the law of life. And those who look only to the past and present are certain to miss the future.' John F. Kennedy (American president)
- 'Growth is painful. Change is painful. But nothing is as painful as staying stuck somewhere you don't belong.' N.R. Narayana Murthy (Businessman)
- 'Life is a series of natural and spontaneous changes. Don't resist them – that only creates sorrow. Let reality be reality. Let things flow naturally forward in whatever way they like.' Lao Tzu (Chinese philosopher)
- 'It's not about standing still and becoming safe. If anybody wants to keep creating they have to be about change.' Miles Davis (Musician)

What moments of transition are members of our community going through?

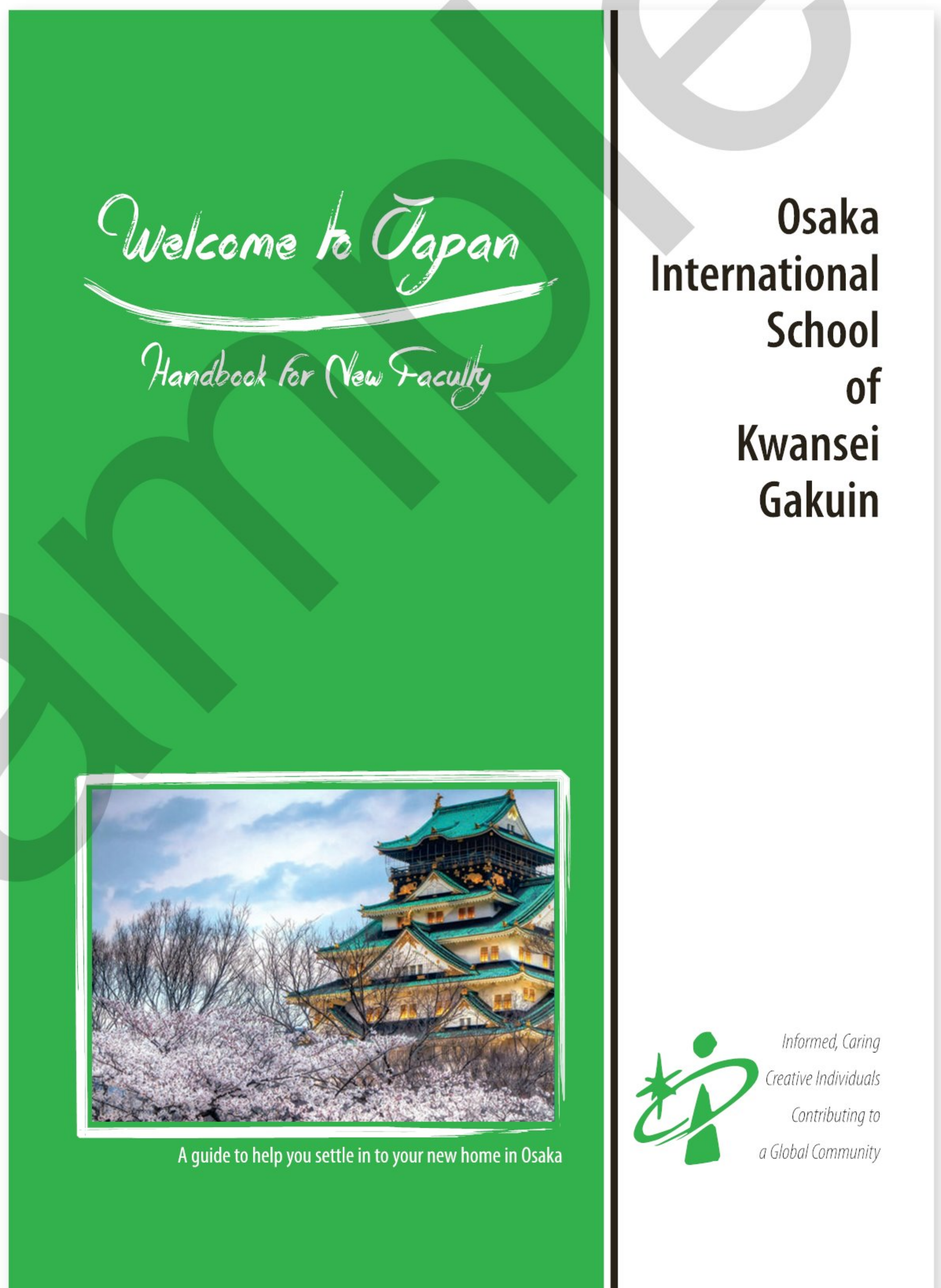
NAME–DESCRIBE–ACT

Use this thinking routine to help you explore how you felt during a recent transition. With a partner, use the following prompts to help you discuss a recent transition you have gone through. If you can't think of one, think back to when you moved from primary school to secondary school. Focus on what was done to help you deal with the change, for example, an assembly, ice-breaker activities, a school tour and so on.

NAME: Recalling from memory, name and make a **list** of all the parts or features you can remember. These will most likely be nouns – things you can point to and name.

DESCRIBE: For each of the things you have named, add a description. What adjectives would you add to the nouns you have listed?

ACT: For each of the things you named, **describe** how they act. What are they doing? What is their function? How do they add or contribute to the whole?



■ **Figure 11.4** Online guide supporting new members of a school community

Design situation

In your school there are no doubt people going through important transitions. These could be students moving from primary school to secondary school, students joining from other schools, families moving to your area or new teachers.

Schools will have resources to support these people, which will be used either before or while they are making the transition. These resources could include videos, guides, lessons, assemblies and other events. You might even have people in your school who are responsible for supporting these individuals, such as an admissions officer, head of MYP 1, school counsellor, parents' group leader, pastoral leaders, school buddies, student ambassadors or school advisors.

For this project you need to pick out the type of transition you want to focus on and **create** a multimodal resource to support them.

Examples of possible products you might **create**:

- An app, with an interactive map of the school, welcome videos and FAQs.
- A welcome booklet, with QR codes linking to videos with testimonials from members of the community.
- Posters with QR codes linked to school policies and a student handbook.
- School signage with added augmented related elements.

MULTIMODAL

Multimodal means that the resource contains different methods of communicating or solving the problem. For example, a website with videos, links to documents and infographics would be considered multimodal.

Schools are usually pretty good at supporting these people when they are part of a group and during the start of their transition, for example, at the start of the year, when there are many students, teachers and families starting at your school. However, when an individual joins the school half-way through the year, there may be less support for them. When picking your target audience and transition type, consider this issue.

You might also consider people who have an added element that makes transition more difficult for them. For example, maybe they are not only new to the school, but they are new to speaking the main language of your school. When picking your target audience and transition type, consider this issue.

DISCUSS

With your classmates, **list** as many answers to the following question as you can:

‘What moments of transition are members of our community going through?’

You might choose to use this list to help you pick out what you want to focus on for this chapter.

ACTIVITY: How do members of your community feel about change?

■ ATL

- Collaboration skills: Listen actively to other perspectives and ideas

To better understand the problems associated with transition in your school, let's start off by gathering **feedback** from a wide range of members of your community. You can ask students, parents, teachers and other members of staff. To do this you want to place your questions somewhere accessible to as many people as possible. This could be the school's entrance, for example. Make sure they are catchy and invite interaction.

Think about some general questions you want to ask and how you will get people to answer them. You might have big flipchart pieces of paper where you ask people to comment; or a poster with choices, where people can add stickers to show how they feel. So you don't overwhelm people or the space with questions, work with your class to come up with your questions.



■ **Figure 11.5** Ask an open question and invite members of the community to add their answers



■ **Figure 11.6** Give people stickers to provide quick responses to multiple-choice questions

You should then do some more focused research, using your target audience and linked to the topic of transition you want to focus on. For example, if you want to **create** a resource for Japanese speakers joining your school, interview some Japanese speakers, or if you want to **create** a resource for students as they join the secondary school, interview first years to understand their experience. Make sure you consider the best way to gather information from your target audience. For example, Japanese speakers may need their questions in Japanese, and first years may need time and guidance in their homeroom class to help them fill in a survey.



■ **Figure 11.7** Leave pens or chalk out and give a prompt to complete

Use the information gained from your general research to **explain** what going through change feels like at your school. You should add photographs showing the visual responses and might also pull out some key responses.

Identify and **explain** the problem you want to solve and use the feedback from your focused research. You should make sure to **describe** how your school currently supports your target audience.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A i: Explain and justify the need.

YOUR TARGET AUDIENCE

When you pick your target audience you might be including different types of people. For example, if you are going to **design** a product to support people who have just moved to the country where your school is based, you might be designing for secondary school students, their siblings and parents. As you move through the design cycle, make sure you keep in mind that you might be designing for different types of people.

DISCUSS

Think back to when you first started the MYP. What did you find confusing or difficult to understand? What are the things people need to know about the MYP? Discuss with a partner, then share your thoughts with the rest of the class.

CIRCLE OF VIEWPOINTS

Use the 'Circle of viewpoints' routine to take on the perspective of your target audience. Understanding how they might feel will help you **create** the best product possible for them.

- 1 Brainstorm a **list** of different perspectives/possible target audiences (students, parents, teachers, etc.).
- 2 Choose one perspective to explore, using these sentence-starters:
 - I am thinking of ... [the moment of transition] from the viewpoint of ... [your target audience].
 - I think ... [describe the topic from your viewpoint]. [Be an actor – take on the character of your viewpoint.]
 - A question I have from this viewpoint is ... [ask a question from this viewpoint].

ACTIVITY: What do you need to know?

■ ATL

■ Collaboration skills: Help others to succeed

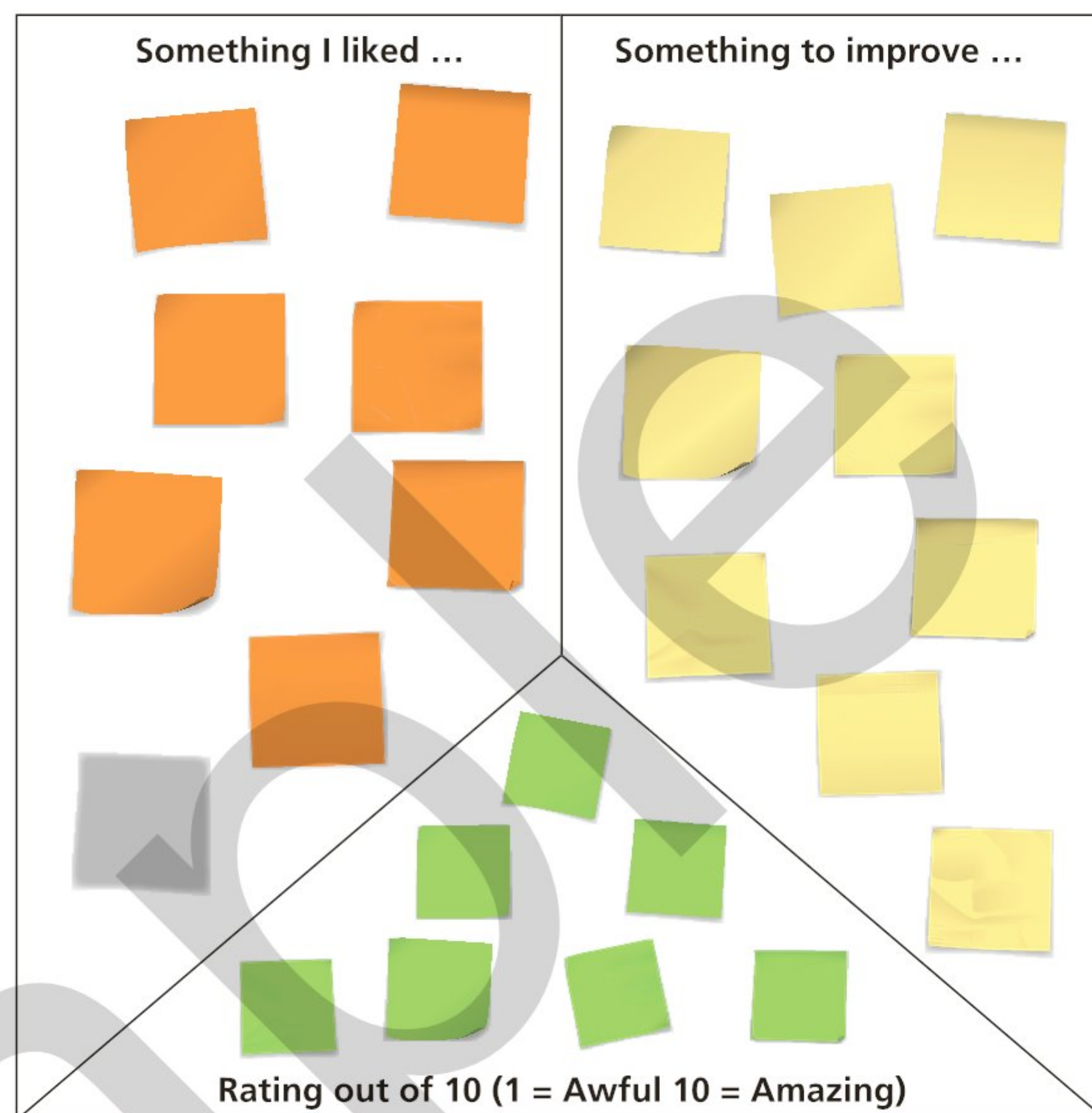
You have done some initial research to better understand the problem you are trying to solve, but now you need to do some research to better understand the solution you need to **create**.

Work with your target audience to find out what questions they had during their transition. Get them to write questions that start with 'What', 'Who', 'Why', 'When' and 'How'. Examples: 'Where is my art class?' or 'How do I use public transport here?'

When you have come up with a long **list** of questions, get your target audience to tell you which were the most important questions they had. Your final product should include these responses.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A ii: Identify and prioritize the research.



■ **Figure 11.8** Three easy prompts to help you gather feedback from your target audience. Look for comments that have been repeated. You can also work out the average rating

ACTIVITY: What support currently exists?

■ ATL

■ Critical-thinking skills: Troubleshoot systems and applications

Find out what resources already exist to support your target audience. You might find brochures, videos, pages on your school's website, lessons/activities, events or other resources. Some might be easy to find independently and others you might have to dig a little deeper to find.

If you are in an international school, for example, your school's website might have a section on employment information. It may have a guide to your city or country available (as this is useful for people to see who are considering applying for jobs at your school too). There might also be a guide that exists, but you might have to speak to your human resources department or school leadership to get a copy.

Analyse the resources using the following three methods:

- 1 Independently analyse the pros and cons:** Focus on the design aspects of the resource. Is it easy to use? Does it look good?
- 2 What questions does it answer:** Look at the questions you generated with your target audience. How many does it answer?
- 3 Get feedback from your target audience*:** What does your target audience like/dislike about the resource? Did they know about it? Did they use it?

As you are required to make a multimodal solution, you might also want to note if the resources you are analysing are.

*Making sure you gather feedback from the target audience is important, because then you can truly see the **impact** the existing resource had on them.



■ **Figure 11.9** An example of an existing resource could be a school brochure given to parents of new students



◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A iii: Analyse existing products.



Social skills

Collaborating with others, including your target audience, is important in design. You do not need to generate every idea alone in isolation but can brainstorm with others. Listening to the perspective of others will give you more options and might open your eyes to ideas you would not have considered by yourself. Consider ways you can get people to share ideas quickly and easily, so that you can get a lot of people to contribute. You could use prompts, on large flipchart paper, to gather ideas from your target audience or classmates.

ACTIVITY: School websites

■ ATL

- Information literacy skills: Collect and analyse data to identify solutions and make informed decisions

One of the resources you **analysed** was probably your school's website. It might be helpful to compare it to the websites of other schools. Which websites best welcome new people? Which features do they include? Are they easy to navigate? Are they **aesthetically** pleasing?

Can you find any schools that do a particularly good job of supporting new members of their community? You might find information about moving to the city the school is based in. You might see welcome events or social programmes, like family buddy systems. Maybe you'll see presentations to explain the school's curriculum, rules or philosophy.

ACTIVITY: I'm going to make ...

■ ATL

- Critical-thinking skills: Propose and evaluate a variety of solutions

Your design **brief** should:

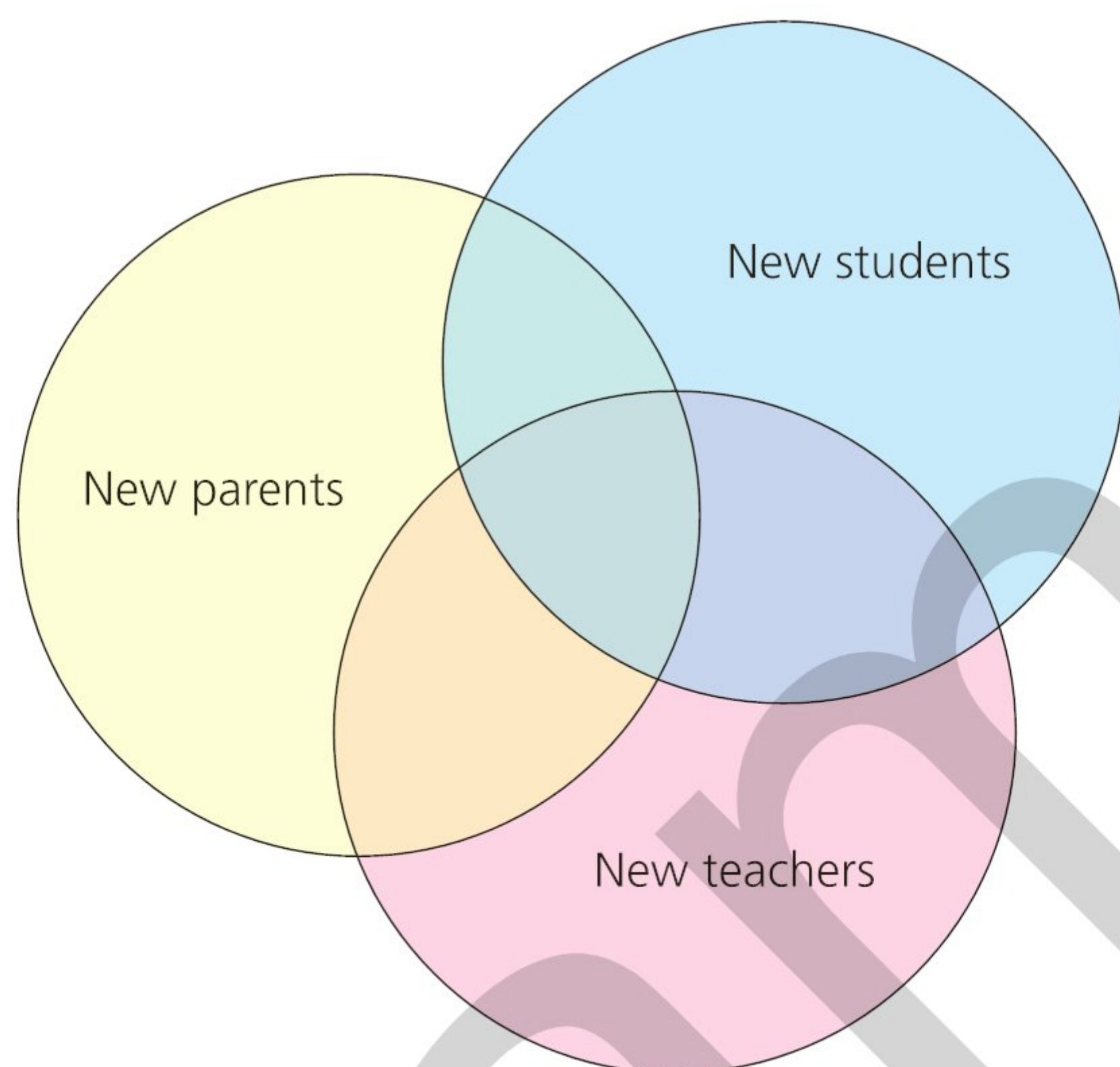
- **describe** the problem you are going to solve
- **describe** the target audience
- **describe** existing solutions
- **explain** what you are going to make, including the different elements that make it a multimodal solution
- **explain** what makes your solution better than the existing solutions
- **explain** the impact you hope to have on your target audience.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A iv: Develop a design brief.

CONSIDER IDEAS FROM MULTIPLE PERSPECTIVES

If you are creating a product for a range of people, consider thinking about all their questions and needs. You might consider putting these into a Venn diagram to help you organize your thinking. Your product should address everyone's questions and needs but should focus on those which overlap between the different types of people.



■ **Figure 11.10** Using a Venn diagram might help you to make sure you are creating a solution that supports everyone in your target audience

ACTIVITY: Must–Should–Could

■ ATL

■ Organization skills: Set goals that are challenging and realistic

For this project you want to make simple **specifications** that show:

- 1 What your product **MUST** do.
- Your product **MUST** do these things to be successful – these should be things you can check off a list: what questions **MUST** it answer? What types of resources **MUST** it include?
- 2 What your product **SHOULD** do.
- Your product **SHOULD** do these things, but if it doesn't do all of them, that is okay – these might be things that only affect some of your target audience: How **SHOULD** your target audience feel? How easy **SHOULD** it be to use?
- 3 What your product **COULD** do.
- Your product **COULD** do these things ... be aspirational. These are things you will include if you can – How **COULD** a video with the principal beç used? How **COULD** art be incorporated into the design?

Create a copy of this table to write your design specifications. You might want to add additional specification types, depending on your product.

My design specifications				
Specification type	Function	Aesthetics	Material	Size
MUST				
SHOULD				
COULD				

■ **Table 11.1** Example of table to write out your design specifications

◆ Assessment opportunities

◆ This activity can be assessed using Criterion B ii: Develop a design specification.

DISCUSS

With a partner discuss the following question:

‘Why can change feel uncomfortable?’

Then look back at your design specifications – is your resource planned to help your target audience feel comfortable with the transition they are dealing with? If not, adjust your specifications.

ACTIVITY: Initial ideas

■ ATL

■ Critical-thinking skills: Propose and evaluate a variety of solutions

Come up with a range of ideas. Write a paragraph about each idea and include some rough sketches if applicable.

Here is an example of an idea aimed at people who have just moved to the city your school is in:

‘I want to create a web page for new members of our community. It will include an interactive map showing major cultural places, restaurants and landmarks. There will be a video montage, showing current members of our community’s favourite places in the city. There will be a page with links to useful resources including the town hall and local tourist website.’

You might find that you have a range of ideas, but they are not widely different. Having variations on one idea is fine. Along with the example above, a website with different features might be proposed or an app with the same features.

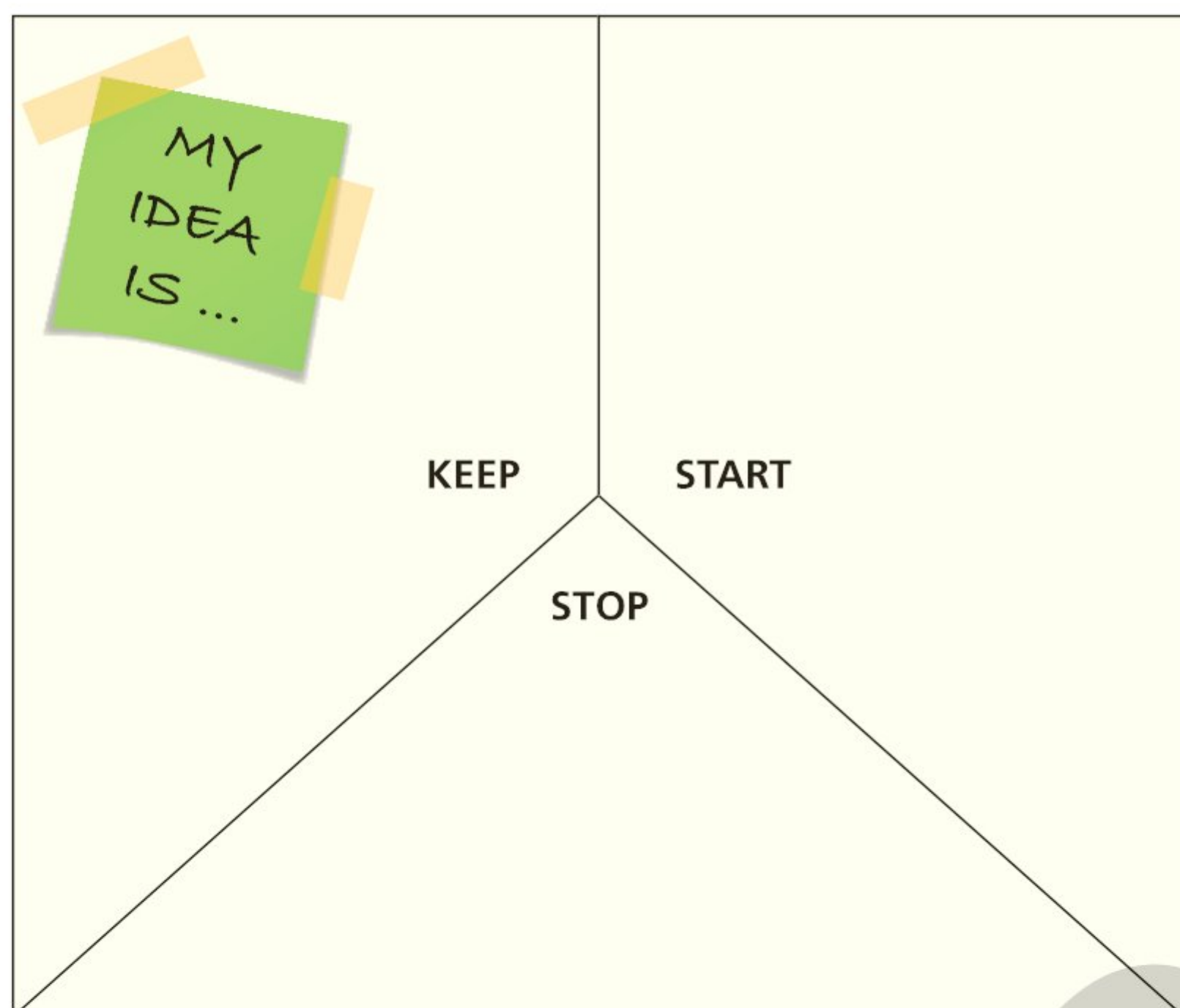
◆ Assessment opportunities

◆ This activity can be assessed using Criterion B i: Develop design ideas.

ACTIVITY: Keep–Start–Stop

■ ATL

- Collaboration skills: Listen actively to other perspectives and ideas



- **Figure 11.11** Share your initial ideas and gather feedback from your target audience with the template above

Gather feedback on your initial ideas, using these prompts:

- **KEEP** – things they like about your current idea
- **START** – new things to add to your current idea
- **STOP** – parts of your idea you should not include.

You might use this method to gather feedback again on a large flipchart, or you might change how you gather feedback, for example, you might use those prompts in a survey.

Once you've gathered the feedback, **describe** which of your ideas or combination of ideas you will **develop** and why. You should use the feedback to improve your idea before going further. Assess your ideas against your 'Must–Should–Could' specifications too.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B iii: Present and justify the chosen design.

ACTIVITY: Final approval

■ ATL

- Collaboration skills: Listen actively to other perspectives and ideas

Before you **create** your final product, make a visual of your idea (which may be a combination of your previous ideas). You should also type out the information you want to include in your product.

When you have done this, you need to gather feedback from an authority before developing your final product. You should do this so that you can check the information your product will contain is accurate. You might share your plan with an admissions officer, head of MYP 1, school counsellor, parents' group leader, pastoral leaders, school buddies, student ambassadors or school advisors.

For feedback on design aspects, including the aesthetics, you might seek feedback from your classmates or your design teacher.

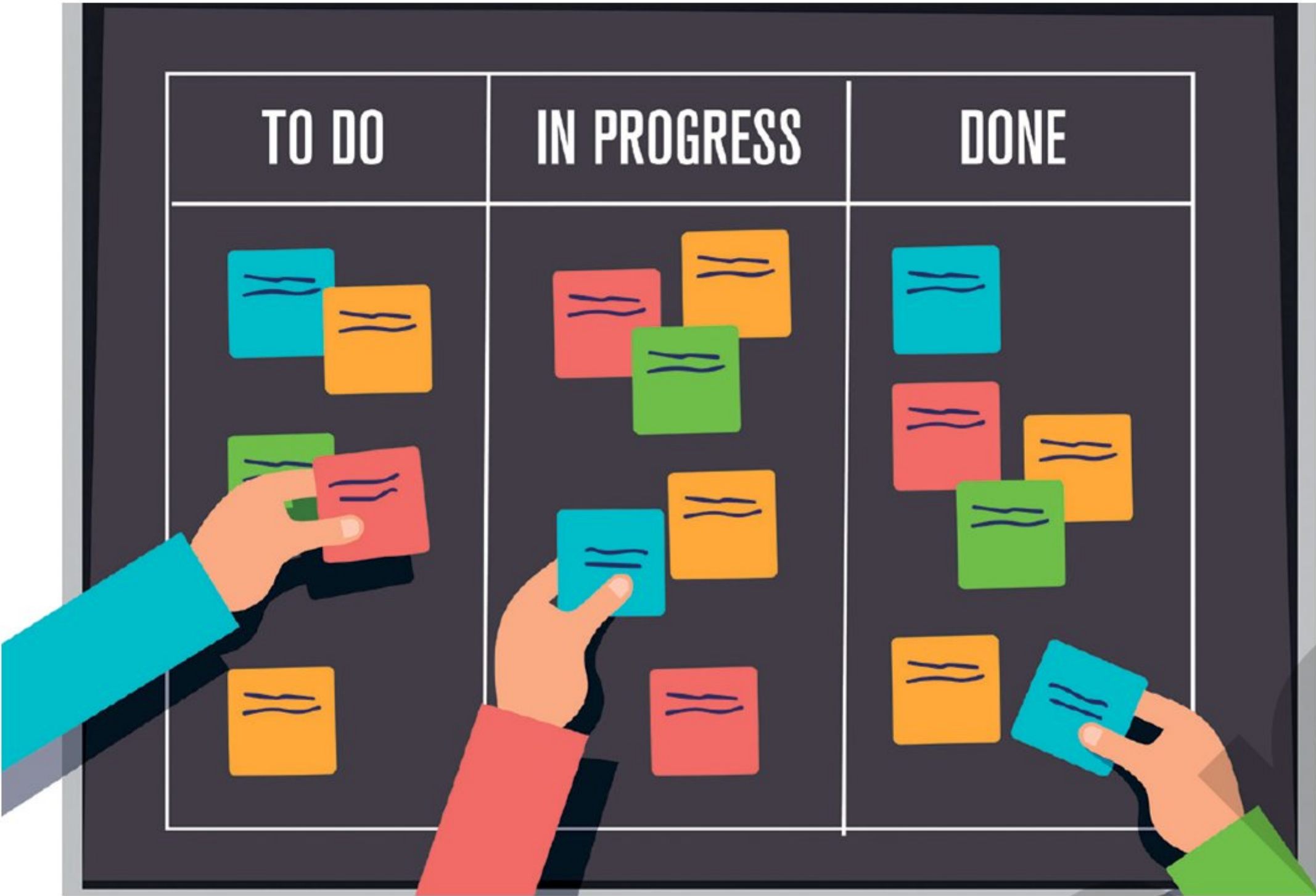
◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B iv: Develop planning sketches.

ACTIVITY: Task list

■ ATL

■ Organization skills: Plan short- and long-term assignments; meet deadlines



■ **Figure 11.12** Use this method to help you keep track of all the tasks you have to complete

Your final product is multimodal so will have different elements, and you need to plan for all of them. For example, if you are making a website with videos and an interactive map, you will need to make a plan for the website, videos and map.

You should write out a logical sequence of steps for each element. You might find that you are working on different elements at the same time, or that you switch between them. This is a realistic reflection of big design projects, especially those which are being worked on by multiple people.

A way of organizing these activities is to write out a plan for each element, then record your progress with a chart showing if the element is waiting to be done, in progress or complete. You could choose to add an extra section of the chart to show when the elements are being tested.

As you work on your product, document the process. You can do this by recording the order you did the tasks in, reflecting on any changes you had to make and any skills you developed.

If you are using this technique when working in a group, it's often called a 'scrum'.

◆ Assessment opportunities

◆ This activity can be assessed using Criterion C i: Construct a logical plan and C iii: Follow the plan to create a solution.

Is change good for us?

ACTIVITY: I'm a multi-skilled designer

■ ATL

- Transfer skills: Combine knowledge, understanding and skills to create products or solutions

As you are creating a product with multiple elements, you will have the opportunity to show off multiple skills. Some of the skills you might incorporate into your final product are:

Animation
Typography
Logo design
Video editing
Web design
App development
Illustration
Coding

■ **Figure 11.13** Some skills that might be needed for your final product

You might be using this as an opportunity to show and improve the skills you have developed during your years of MYP design. For each of the different elements of your final product, take some screenshots/photographs showing how you developed your technical skills. Include the variety of tools, techniques and equipment you used to **create** your high-quality solution.

Make sure you show off the complexity of the skills you have used. **Describe** if, when and how you used support from the teacher. For your aesthetics, show off when you have given extra attention to detail and how all the elements work and fit together.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion C ii: Demonstrate technical skills.

ACTIVITY: Justifying changes

■ ATL

- Reflection skills: Develop new skills, techniques and strategies for effective learning

If you have made any changes, you must be able to **justify** why. Perhaps you made changes as you found an easier or faster way to complete a step. Maybe you made a change because something didn't visually look right. Perhaps someone gave you useful feedback mid-way through making the product. Remember that changes should only be made to improve the process and/or the final product.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion C iv: Justify changes made to the plan.

ACTIVITY: Testing my product

■ ATL

- Communication skills: Give and receive meaningful feedback

In this chapter you have been designing a product for a very real target audience – a target audience that you have had easy access to and used throughout your planning. However, it might be hard to authentically test your product because the individuals who helped you have already gone through the transition.

For example, if you are designing a product to be used by MYP 1 when they join the school, you don't want to have to wait till the beginning of the next school year to test the product. However, if you are designing a product for someone joining the school mid-way through the year, you might be lucky enough that a new student joins and can test your product. However, let's plan to have people test your product by thinking back to when they went through a transition. This means you will have to use the past tense or explicitly ask them to imagine their past self seeing your resource.

You might gather your feedback through similar strategies as you used earlier, with big flipchart paper, sticky notes or stickers. You might also use interviews, observations or surveys.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion D i: Develop testing methods.

ACTIVITY: Success

■ ATL

- Critical-thinking skills: Evaluate evidence and arguments

Use the feedback from your tests to **evaluate** the success of the solution. You should **describe** any limitations of the testing. Asking people to think back to how they felt when they were in the transition is a type of limitation.

Look at the original list of questions you wanted to answer. Does your product solve none, some or all of them? You should also test your final product against your 'MUST-SHOULD-COULD' specifications. How many of the important 'musts' did you achieve? How many 'shoulds' did your target audience say you achieved? Were you able to add any of the 'coulds' into your design?

Use the data gathered to **evaluate** the success of your solution and to **describe** how it could be improved. If possible, you may do another round of improvements, based on this information, before your product is 'complete'.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion D ii: Evaluate the success of a solution and D iii: Explain how to improve the solution.

Self-management: Affective skills



F FIRST
A ATTEMPT
i IN
L LEARNING

■ Figure 11.14 Learning through failure

When we make mistakes we have an opportunity to learn. We can practise failing well by considering what caused us to fail and what we would do differently next time.

If you never struggle or make mistakes, then perhaps what you are doing is too easy and you are not learning. Celebrate your failures and use them to move forward.

When creating a product you go through several rounds where you gather feedback and make improvements. This might be done through different methods, such as testing **prototypes**, gathering expert feedback or surveying your target audience. Without going through these phases, which include identifying weaknesses and making mistakes, our final product would not be as good. Failing is a fundamental element of design.

DISCUSS

With a partner discuss the following question:

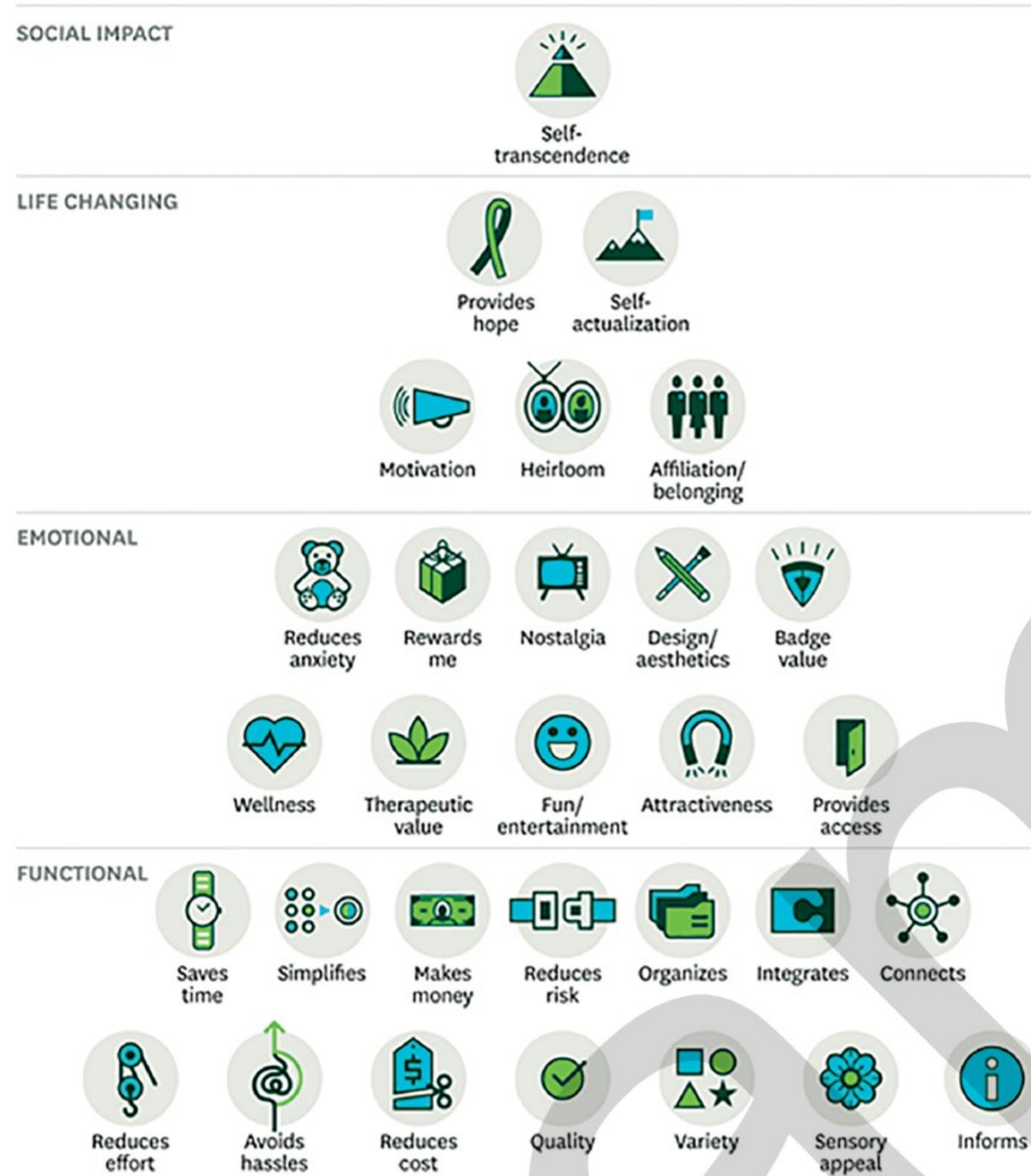
'Is change good for us?'

Can you think of examples of when change has been good/bad for you?

ACTIVITY: How much value does my product add?

■ ATL

■ Collaboration skills: Help others to succeed



■ **Figure 11.15** The Elements of Value Pyramid, developed by the *Harvard Business Review*

The *Harvard Business Review* developed the 'Elements of Value Pyramid'. This is now used by many businesses to evaluate the success of a product or service. The pyramid divides **client** needs into functional, emotional, life changing and social impacts. The more elements provided by the product or service, the better it is.

List the different elements and **describe** how your product achieves them. Your answers should be based on the feedback you gathered.

Here's an example, based on a product made for a new student:

- **Functional:** Saves time – my target audience, a new student, now knows their way around school.
- **Emotional:** Reduced anxiety – my target audience is less stressed about their first week of school.
- **Life changing:** Affiliation/belonging – my target audience feels welcomed by the school.
- **Social impact:** Self-transcendence – my target audience forgot about the fears they had.

Other examples:

- www.marketingjournal.org/the-elements-of-value-an-interview-with-jamie-cleghorn
- <https://medium.com/marketing-and-entrepreneurship/your-customers-have-these-30-needs-are-you-meeting-them-c79085e84ab3#.cqr2jny3f>

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion D iv: Explain the impact of the solution.

DISCUSS: Change is the only constant

Go back to the list of quotes about change from the start of the chapter. Which quotes resonate most with you now? **Explain** your answer to a classmate, then share your ideas with the rest of the class.

EXTENSION

Consider how you might use the skills you showcased in this chapter to benefit your school community in other ways. You might help them redesign other resources or might design completely new products.

! Take action

- ! Take action by considering other ways you can support members of your community dealing with change. You might make a student welcome committee for new teachers, a buddy system for new students or new-family lunch events.
- ! You might consider other types of transition students might be going through, including physical or mental transitions such as family changes or changes to friendship groups. How might you take action to support people through these changes?
- ! Lastly, consider big transitions people are going through outside of school and how you might help. This could be anything from supporting people who are newly homeless to someone newly diagnosed with a disease.

Reflection

In this chapter we thought about the way that change affects members of our community. We explored the ways our school is currently supporting members of our community going through change. We took action by creating resources to support transition in our community.

Use this table to reflect on your own learning in this chapter.					
Questions we asked	Answers we found	Any further questions now?			
Factual: What is transition? What moments of transition are members of our community going through? What are the stages of culture shock?					
Conceptual: Why can change feel uncomfortable?					
Debatable: How can we decide when change is good for us, and when it may not be?					
Approaches to Learning you used in this chapter:	Description – what new skills did you learn?	How well did you master the skills?			
		Novice	Learner	Practitioner	Expert
Communication skills					
Collaboration skills					
Organization skills					
Reflection skills					
Information literacy skills					
Critical-thinking skills					
Creative-thinking skills					
Learner profile attribute(s)	Reflect on the importance of being caring for your learning in this chapter.				
Caring					

12

How can designers bring other people's ideas to life?

- Considering the **perspective** of others, through seeing how they **express** themselves, helps us make **connections** with them.

CONSIDER THESE QUESTIONS:

Factual:

What strategies can we use to help children express themselves?

Conceptual:

How can we show that we understand someone else's perspective?

Debatable:

Can children be designers? Does artistic expression help childhood development?

Now **share** and **compare** your thoughts and ideas with your partner or with the whole class.

KEY WORDS

plush



Figure 12.1 How can we help children express themselves?

IN THIS CHAPTER, WE WILL ...

- find out** how we can help children express themselves
- explore** the benefits to children of creative expression
- take action** by turning a child's imaginative drawing into a product.

We will reflect on this learner profile attribute:

- Knowledgeable

We will use our design knowledge and skills to help turn a less knowledgeable/skilled person – a child's – drawing into a product.



Children spend a lot of time engaging in imaginative play, including through drawing, painting and other arts and crafts activities. As they are developing their fine and gross motor skills, their drawings do not always reflect what they have imagined. As a designer, you know that practice makes perfect and design skills can take years to perfect. As you have developed as a designer, you will work with a child to turn their drawing into a real product, for example turning a drawing into a cuddly toy. In this chapter you will explore the benefits the child gets from creative expression, as well as the benefits of working with you.

◆ Assessment opportunities in this chapter:

- ◆ Criterion A: Inquiring and analysing
- ◆ Criterion B: Developing ideas
- ◆ Criterion C: Creating the solution
- ◆ Criterion D: Evaluating

■ These Approaches to Learning (ATL) skills will be useful ...

- Communication skills
- Collaboration skills
- Organization skills
- Reflection skills
- Information literacy skills
- Critical-thinking skills
- Creative-thinking skills

ACTIVITY: Childhood memories

Think back to when you were a young child.

What memories do you have of drawing pictures?

Maybe you drew a particular picture over and over? Maybe you remember a picture your parents particularly liked and put on display in your house?

Share your reflections with a classmate.

Who did you look up to when you were little?

Maybe you had an older sibling or cousin you admired? Maybe you had a teacher who inspired you?

Share your reflections with a classmate.

What were the big problems you faced as a child?

Maybe you were afraid of something or someone? Maybe you were shy? Maybe something difficult happened in your family?

Share your reflections with a classmate.

How does artistic expression help childhood development?

WHY CHILDREN SHOULD DRAW



■ **Figure 12.2** Drawing is not only fun, but has many benefits

Drawing provides many benefits to young children, including:

- develops fine motor skills
- improves hand–eye coordination
- develops imagination
- encourages visual analysis
- encourages story telling
- helps concentration, patience and perseverance
- gives children something to be proud of and improves confidence
- helps children learn colours and shapes
- helps children relax
- helps children express themselves
- provides an opportunity for bonding when drawing with someone else, like a parent.

Learn more about the benefits of drawing for children:

- www.ekidstation.com/5-benefits-of-drawing-for-children
- <https://kidscountryinc.com/2016/07/21/6-benefits-drawing-time-children>
- www.kiwifamilies.co.nz/why-drawing-important-childrens-development
- <https://ill.edu.au/News-and-Advice/2020-03/benefits-of-drawing-for-children>
- www.minilabstudios.com/why-drawing-is-important-for-your-childs-development

Design situation

In the lead up to World Children's Day (20 November) your school's Service as Action coordinator may have challenged you to use and improve on skills learnt in one of your MYP classes to improve the life of a child. The school wants students to focus on the learning outcome 'Undertake challenges that develop new skills'. You have decided to use and improve skills you have developed in design class to turn a child's drawing into a product.

This chapter will focus on creating a soft, plush toy for a child, but you might pick a different product to **create**. Other examples of products you might make include a wooden toy, bedroom door sign, pop-up book, digital storybook, backpack keyring figure or fancy-dress costume. Think about which skills you want to strengthen and use this unit as a chance to explore and **develop** those skills further.

EXTENSION

You may wish to do some further research by investigating the following links:

- www.un.org/en/observances/world-childrens-day
- www.unicef.org/world-childrens-day

THINK–PAIR–SHARE

Before you begin researching the benefits of artistic expression on childhood development, see if you can come up with your own ideas about what the benefits might be. Share your thoughts with a friend, then the class.

What strategies can we use to help children express themselves?

ACTIVITY: Selecting a client

■ ATL

■ Collaboration skills: Help others to succeed

The first thing you need to do before you begin designing is **identify** your **client**. This is the child you will work with to bring their drawing to life. You might have a primary section of your school, so could work with a child from there. You might have a younger sibling, cousin or family friend you could work with. You might be involved with an activity that is connected to younger students, such as Scouts, Woodcraft Folk or a youth or

ACTIVITY: The initial spark

■ ATL

■ Collaboration skills: Encourage others to contribute

To kick off this project you need to sit down with your client and get them to draw their initial idea – most likely you will be getting them to draw a character, like a monster or princess. You might find a hurdle, for example the child might be shy or they might not include much detail in their drawing. To get the best ideas from your client, you should **design** an activity that will help them with their drawing, along with questions you may want to ask them or information you want to gather from your drawing session. When you have your **list** of questions/information, make sure to highlight which are the most important to you (for example, you might think that knowing the name of the child's character is more important than knowing their favourite colour). The questions you list might be answered by the drawing, for example, you might want to know the child's favourite sport, but they might draw their character playing football.

Some examples of activities you could do with your client:

- **Mad Libs:** Write out a short story about the character, but with spaces or choices where they fill in the missing words. Get your client to give you the words to create the story. You can then read through the story and ask further questions, having them elaborate and add additional details.

- **Consequences:** Fold several pieces of paper into sections for different parts of the body, for example, the eyes, then the nose, then the mouth. Have the child draw one section, like the eyes, then you draw the next section, the nose. Make sure you can only see the piece of paper you are drawing on. Do this with several pieces of paper, so that you get each part of the body drawn by the child. Then get the child to pick out their favourite sections to make their final character.
- **Roll a creature:** Divide the creature's physical attributes into different categories, like colour, eyes or nose. For each category come up with six choices. Ask the client to roll a dice to decide on each choice, then use those to draw their character. You could even get them to draw the six choices, then use the dice to pick.

Your product will be based on this research, so make sure you gather plenty of information to help you with your design. It's best to have more information and ideas, to give you more options.

You may want to do additional research into techniques and materials (for example, if you are creating a plushie toy, you may want to find out the best stitches to use, and you may want to investigate which materials are soft, **durable** and easy to clean).

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A ii: Identify and prioritize the research.

Once you have identified the child you will work with, and got permission from their parents, teacher or other responsible adult, you need to **explain** some of the problems they might have. You'll think about general problems that they and their peer group might face, such as classroom bullying or shyness. If more individual problems are shared by the responsible adult, for example a family death or sickness, you can mention that, but you do not need to delve too deeply into these as they might be highly personal or sensitive issues.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A i: Explain and justify the need.

■ **Figure 12.3** Mad Libs



■ **Figure 12.5** Roll a creature

VAGUE CLIENTS

It's always important that a designer knows what a client wants ... but this can be difficult as they are sometimes vague or they don't quite know what they want. As a designer, you are the design expert and have the difficult challenge of bringing the client's vision to reality ... even if they can't quite visualize it.

There are some strategies you can use to help understand what a client wants:

- Ask open questions that encourage long, narrative answers.
- Ask questions that give the client choices.
- Nudge for more answers ('Tell me more').
- **Create** mood boards to share with the client.
- **Create** quick **mock-ups**, wireframes or sketches to gather **feedback** from the client.
- Give examples of similar work.
- Instead of getting the client to tell you what they want, find out what they don't want.
- Focus on getting objective feedback/information from your client, not subjective.
- Don't be afraid to ask for elaboration.

These strategies are important for getting initial ideas, as well as for getting feedback on your first visuals. Although you are the design expert, you want the client to feel included and that they are part of the design process. Make sure your client feels like they collaborated on the solution.



■ **Figure 12.6** Designers analysing fabric swatches

MATERIALS RESEARCH

As a designer you know that the materials you use are important. When picking a material you should think about how it looks and feels, how much it costs, how durable it is, how easy it is to maintain/clean, where and how the material is sourced and the environmental **impact** it has.

Wherever you are using wood, fabric or plastics, it is always important to consider the impact you using the material has on others, as well as how suitable the material is for your product.

If you are using fabrics, you might consider getting swatches to **analyse**. Swatches are small sample pieces of fabric. You can usually get these free or for very low cost at fabric shops. If you are designing your own fabric, you can usually purchase a small swatch before committing to a larger order.

EXTENSION

Spoonflower is a company that lets you design and sell your own fabric. You can have your design printed on many different types of fabric. You can buy a sample pack with samples of every fabric option at www.spoonflower.com/en/sample-pack

MEET THE DESIGNER

The Monster Project

<https://themonsterproject.org>



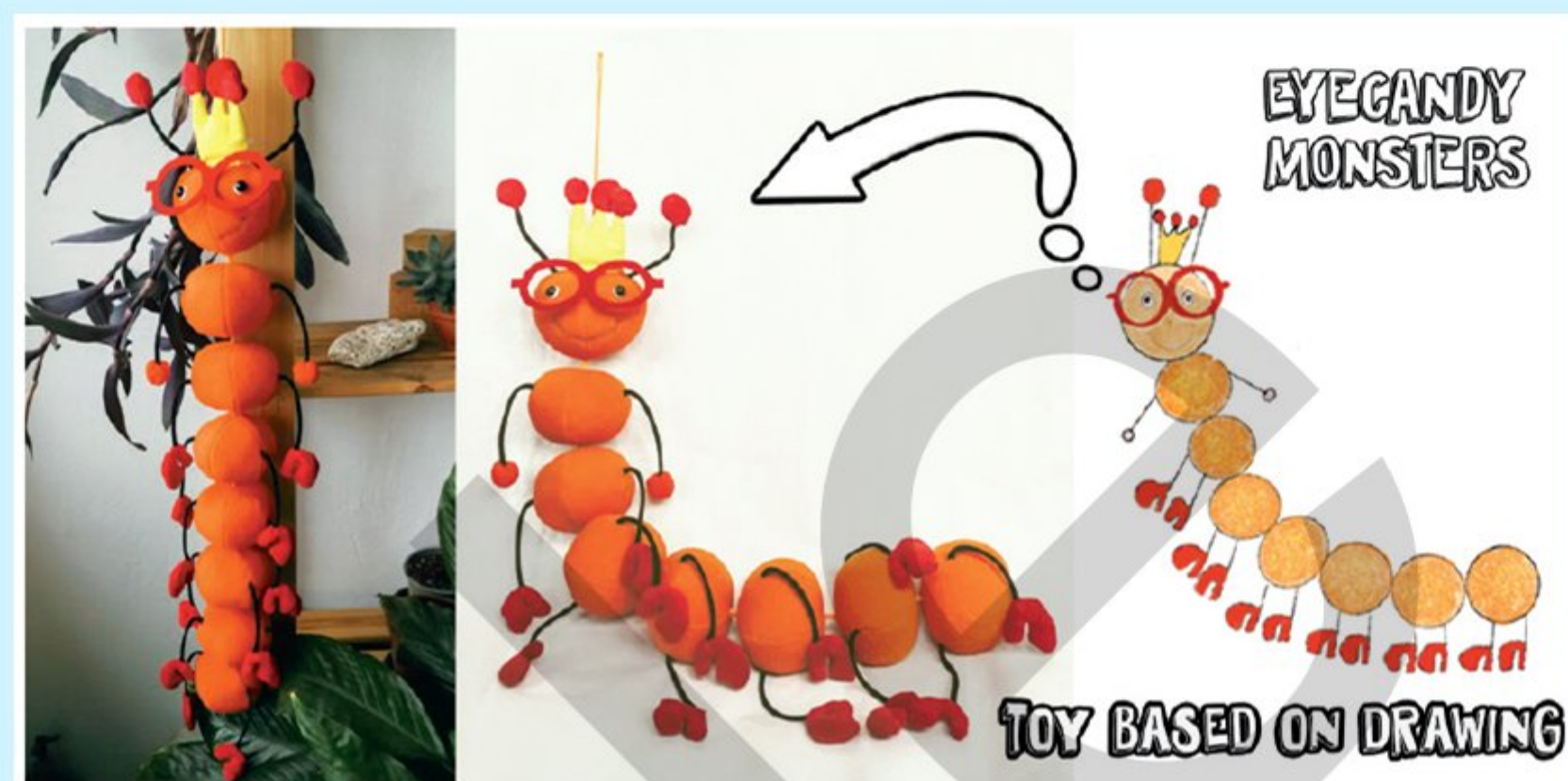
■ **Figure 12.7** Artists being inspired from children's imaginations

The monster project has primary school children draw monsters, then artists from around the world reimagine them in their own style.

MEET THE DESIGNER

Eye Candy Made

www.etsy.com/people/eyecandymade



■ **Figure 12.8** Bringing drawings to life

Drawings turned into plush toys, by Etsy store Eye Candy Made.

MEET THE DESIGNER

The Truthful Stitch

www.etsy.com/uk/shop/TheTruthfulStitch



■ **Figure 12.9** Drawings preserved as cross stitch

The Truthful Stitch takes children's drawings and cross stitches them.

MEET THE DESIGNER

Tasarim Takarim

www.etsy.com/uk/shop/TasarimTakarim



■ **Figure 12.10** Jewellery created from drawings

Tasarim Takarim turns children's drawings into beautiful jewellery, like this example drawn by Sam.

MEET THE DESIGNER

Violeta Owl

www.etsy.com/uk/shop/VioletaOwl



VioletaOwl brings children's drawings to life through crochet.

■ **Figure 12.11** Drawings into crochet toys

MEET THE DESIGNER

Picture This

<https://picturethisclothing.com>



■ **Figure 12.12** Children designing their own clothes

Picture This turns children's drawings into different clothes, including dresses, face coverings and t-shirts.

MEET THE DESIGNER

IKEA

www.ikea.lv/en/inspirations/the-sagaskatt-2019-collection



■ **Figure 12.13** Some of the toys made by IKEA as designed by children

For several years IKEA has had children submit their drawings for the chance to have them turned into toys to be sold in stores worldwide; 100 per cent of the profits go to IKEA's 'Let's Play for Change' campaign, supporting several children's charities, including Handicap International, Room to Read, Save the Children, Special Olympics, UNICEF and War Child.

MEET THE DESIGNER

Urban Twist

<https://urbantwist.co.uk>



■ **Figure 12.14** Drawings engraved onto key rings

A key ring based on a child's drawing from UK-based company Urban Twist.

MEET THE DESIGNER

Mini Dolly

www.etsy.com/uk/shop/MiniDollyShop



■ **Figure 12.15** Creating 3-D products of drawings
Mini Dolly turns children's drawings into figures using 3-D printing.

MEET THE DESIGNER

Caitlyn Minimalist

www.etsy.com/uk/shop/CaitlynMinimalist



■ **Figure 12.16** Drawings into jewellery

Caitlyn Minimalist turns children's drawings into beautiful jewellery.

ACTIVITY: Analysing existing products

■ ATL

- Communication skills: Make inferences and draw conclusions

The examples shared in this chapter show how other designers have taken children's products and made them into reality. Some of the designers have taken the exact image and transferred it to a product, whereas others have improved or changed the drawing. When **analysing** these you should consider which version you will do when you make your product.

If you are doing research online, you may be limited to how much you can analyse. You can probably **analyse** the **aesthetics** from the photographs and should be able to find out additional details, including the size, materials and cost. You might also be able to find reviews or a rating for the product. If you have physical access to the product, there are additional elements you

can review, for example, how the product feels, smells or how durable it is.

You should also **analyse** other examples of the product type you are making. For example, if you are making a plush toy, you might also want to **analyse** other plush toys that are not based on children's drawings.

Lastly, make sure you **describe** what you think your client, or a child of the same age, would think of the products you are **analysing**. You'll have to make your conclusion based on the evidence you have gathered so far.

Bonus: You might decide to show the products you are **analysing** to your client and gather feedback from them.

Plush designers worth exploring: Giant Microbes, iHeartGuts, JellyCat, Maileg, Melissa and Doug, Posh Paws, Smoko, Steiff Bears and Wild Republic.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A iii: Analyse existing products.

ACTIVITY: Design brief



■ ATL

- Communication skills: Use appropriate forms of writing for different purposes and audiences

You now need to **summarize** what you have learnt so far and **describe** what you are going to make in your design **brief**. Your design brief should be simple, so that your client, a child, can understand it. You also want to make sure that the client can clearly see their influence on what you hope to make – it should make them excited about the final product.

Your design brief must **outline** the design skills you will use to **create** the product. This will tell the client exactly why you should be involved in bringing the drawing to life.

The design brief will most likely be read by the child's parent or teacher, so you should make sure it appeals to them too.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion A iv: Develop a design brief.



ACTIVITY: Design specifications

■ ATL

- Communication skills: Organize and depict information logically

For the **specifications** for this product, you should make a **list** of practical features the product must have. These will be easy to measure through looking at or touching the object. These could include colour, materials, size, durability and safety features. Safety features might include no sharp edges, no small parts and non-toxic dyes. Think of these as your practical specifications – what does your product need to function?

The second type of specifications should be those you can measure with the help of your client, through an interview, survey or **user trial**. These might be linked to how the client interacts with the product or how it makes them feel. Think of these as your aspirational specifications – what does your product need to do to make an impact on your client?

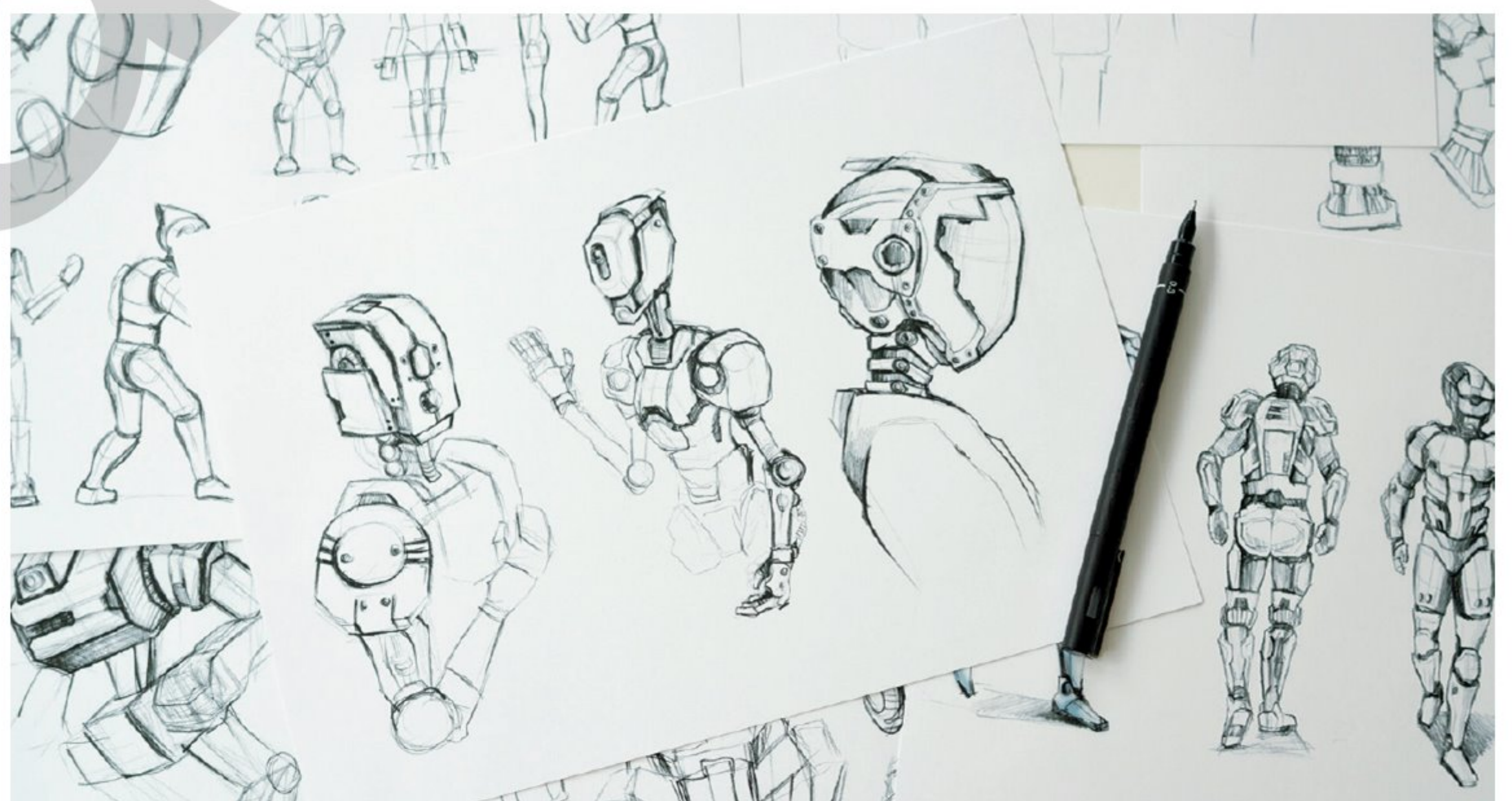
◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B ii: Develop a design specification.

ACTIVITY: The first steps of bringing their design to life

■ ATL

- Communication skills: Interpret and use effectively modes of non-verbal communication



■ **Figure 12.17** If you are reimagining their drawing, you might wish to draw it at different angles or doing different activities, to bring the design to life for your client

ACTIVITY: Client feedback

■ ATL

- Collaboration skills: Listen actively to other perspectives and ideas

As you show your initial sketches to your client, gather feedback on each idea. As you are working with a child, you might find that they:

- **don't want to say anything negative as it might hurt your feelings**
- **don't say anything negative because they love all the ideas**
- **are shy and don't say much at all**
- **are super critical**
- **just agree with everything you say.**

Think about ways you might tackle this before you gather feedback from them.

Some suggestions:

- **Get them to place the sketches in order from favourite to least favourite.**
- **Get them to pick different elements they like from each sketch (for example 'which sketch has the best eyes' or 'which shape dress do you like the most').**
- **Ask them to pick one design to show to a friend.**
- **Come up with a list of questions and give them to someone else to conduct the feedback interview.**

When you have gathered feedback from your client, **describe** which idea you will take further or which elements from the different ideas you will bring together.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B iii: Present and justify the chosen design.

You've already got some initial visuals for your design – your client's drawings. However, when you interpret and transform them they might not look quite how the client has visualized. Sketch several of your own versions of their drawing or several ways you will use their original drawing on a product. You'll use these to get feedback from your client, so when annotating, make sure you add simple, easy-to-understand words. Often at this stage in the design cycle, we don't colour our sketches, but for this project you should. You really want your client to fully visualize your idea before you make it, as the purpose is to bring their imagination to life.

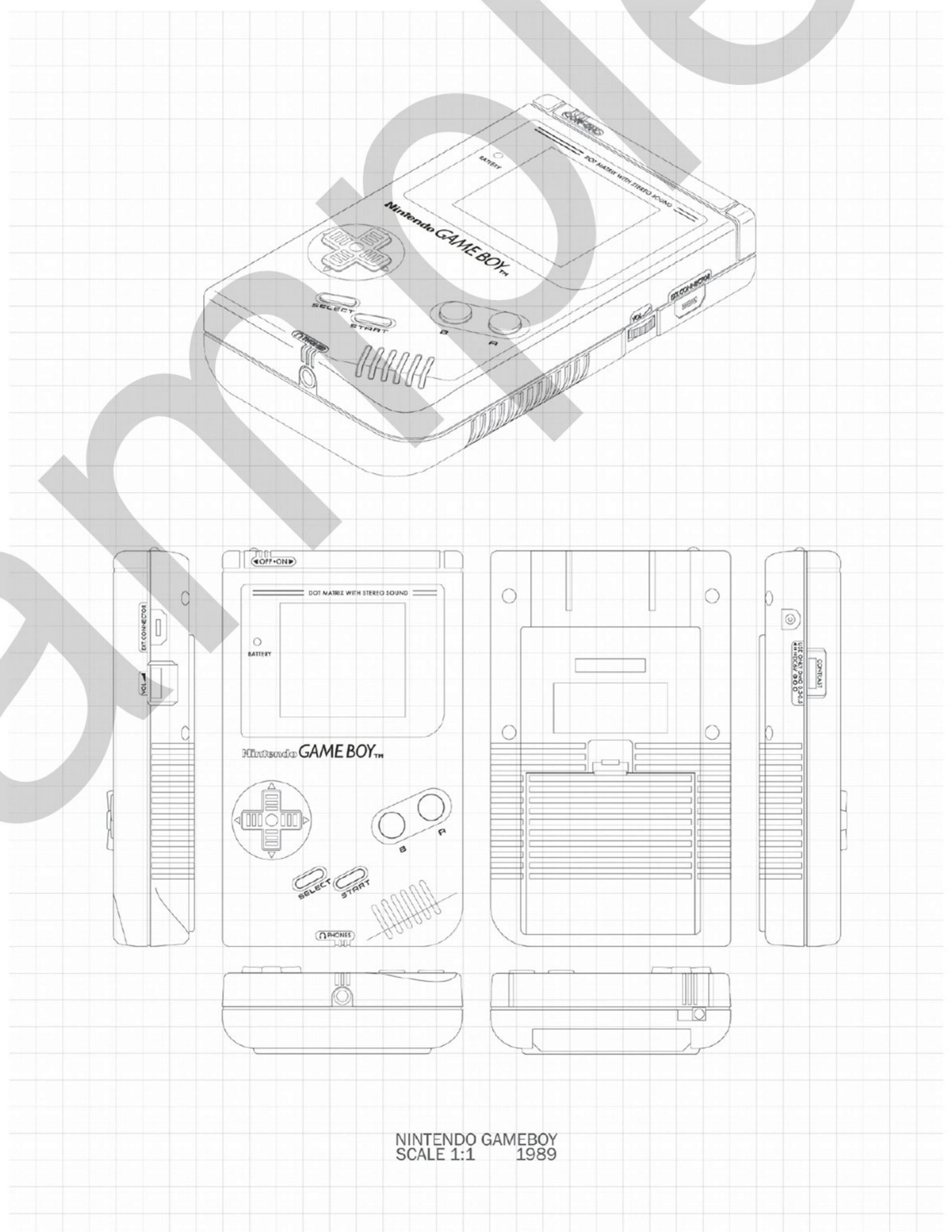
◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B i: Develop design ideas.

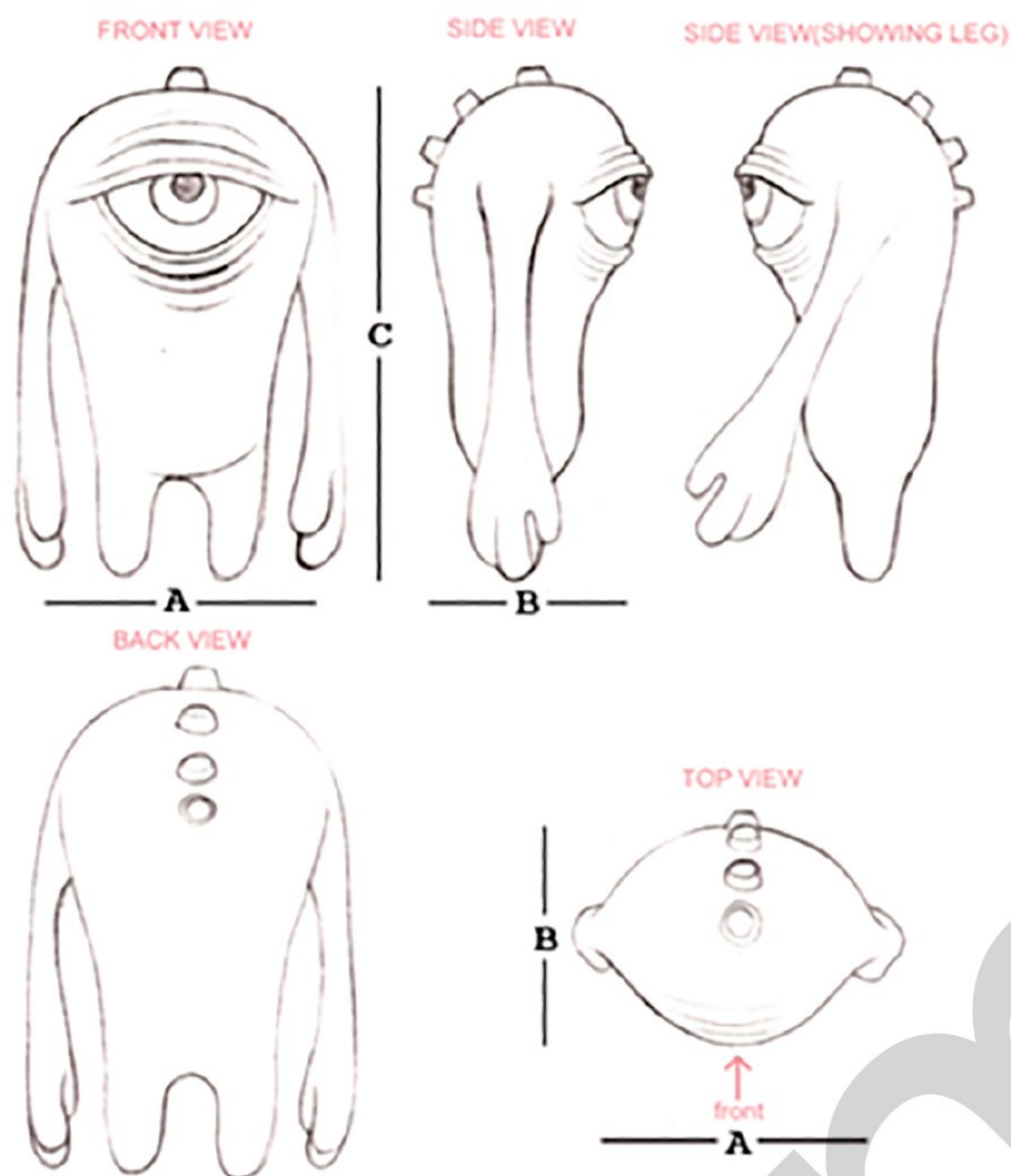
How can we show that we understand someone else's perspective?

ORTHOGRAPHIC DRAWINGS

Orthographic drawings are drawings of 3-D products, shown through a series of 2-D visuals, so you can see the object from multiple sides. This is useful when designing any 3-D product, including a toy. You should draw the image from the back, sides, front and top. If you have a more complex shape, where those angles don't let you see all elements of the object, then you should add additional angles. This skill is very important when you, as a designer, are working with a manufacturer to make your product. If you are making your own product, it also helps you to make sure you have considered all parts of your design before creating it.



■ **Figure 12.18** Orthographic drawings of the original Game Boy console



■ **Figure 12.19** Orthographic drawings for a toy monster

EXTENSION

Make a 3-D plush pattern from a 2-D drawing:
<http://laurenvenell.com/epic-how-to-make-a-3-d-plush-pattern-from-a-2-d-drawing>

ACTIVITY: Detailed final drawings

■ ATL

- Communication skills: Interpret and use effectively modes of non-verbal communication

Using the feedback from your client, **develop** visual plans for your final design. If you are making a 3-D product, you should **create** orthographic drawings. Make sure you colour your drawing, add clear annotations and that it is done to scale. The purpose of this drawing is to help you when creating the product (if you were working with a manufacturer, it would help them too), not for gathering feedback from your client. However, you can of course show it to your client, get more feedback and tweak the design if needed.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B iv: Develop planning sketches.

ACTIVITY: Step-by-step plan

■ ATL

■ Communication skills: Organize and depict information logically

Regardless of the type of product you are making, you need to **create** a step-by-step plan to **describe** your process. At this stage you have shifted from being the designer to the manufacturer. Although you are the same person, your plan should be clear enough for a stranger to follow, because if you were working in design, the reality is that you might not be involved with the manufacturing process – it might not even happen in the same building or even country as you. The plan might use charts, diagrams or be presented in a table. If there are steps that are repeated multiple times, or if the order of steps is not linear, you might **present** your work as a flow chart.

Your plan should include materials, tools, time and a description of each step. Use your plan as a way to **demonstrate** your design knowledge by showing that you know the best way to make your product. Make sure you use the correct terminology.

Your plan should **describe** each step and it should include quality control. As well as being a high quality product, it should also be safe, as you are designing for a child. In your plan make sure you include quality control checks or tests that can be done through the process.

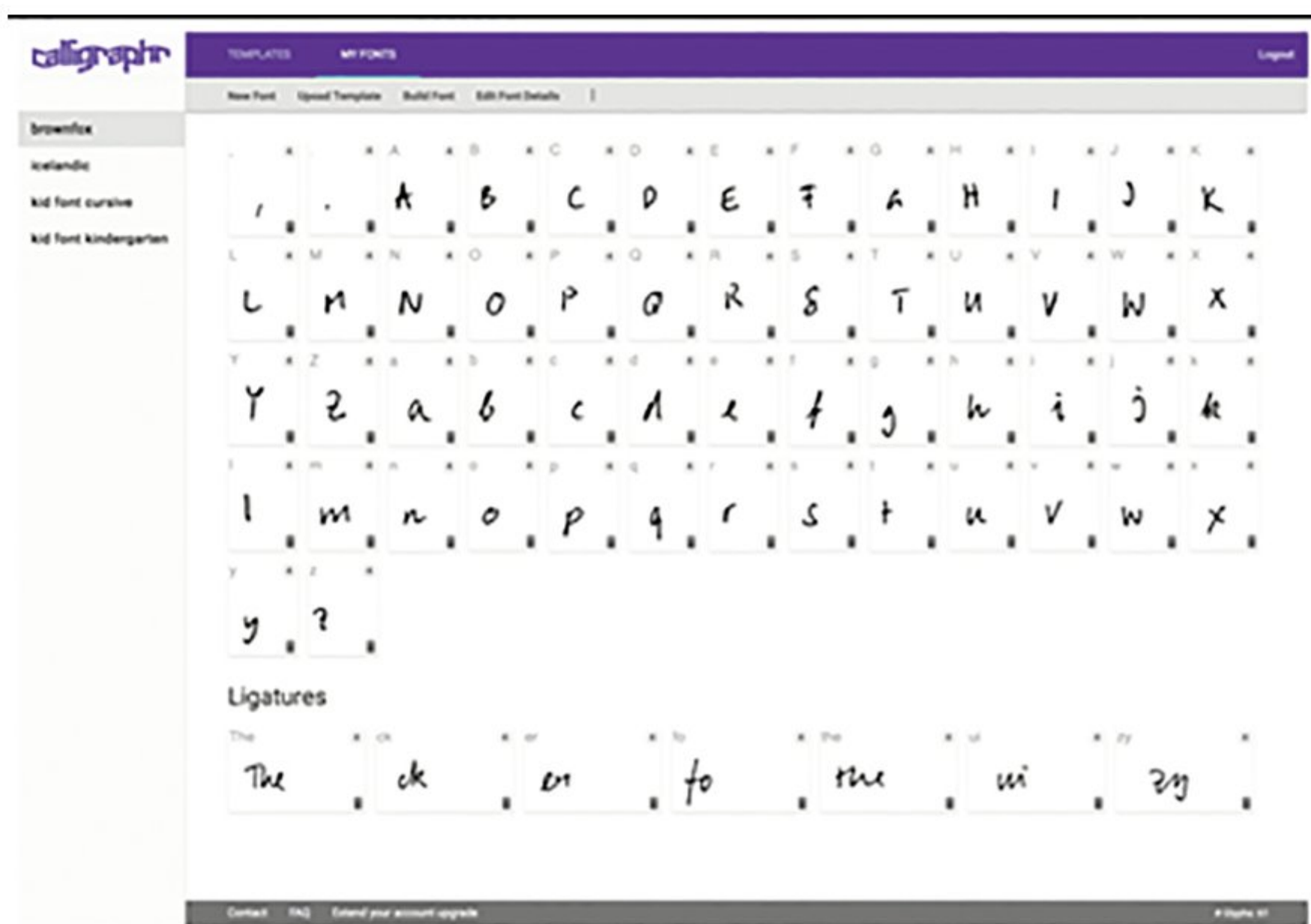
◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion C i: Construct a logical plan.

THINK–PAIR–SHARE

As you are creating your product, you are bringing in your own creativity to enhance or transform your client's initial idea. Does this mean you are truly exploring their perspective or bringing in your own?

HANDWRITING TO FONT



■ **Figure 12.20** Calligraphr

You might be making a product, like a story book, app or t-shirt, which requires text. There are many fonts available that look playful, childlike or similar to a child’s drawing, but why not go one step further and turn your client’s handwriting into a font? There are many websites that allow you to print off a template, fill it in by adding the alphabet in upper-case and lower-case, as well as some numbers and basic punctuation, which you then scan to turn into a real font. This technique might be perfect for your client, as seeing their handwriting in your design might impress and excite them and might build their confidence in their writing.

Caligraphr (www.calligraphr.com) is an easy-to-use free resource for turning handwriting into a working font.

Can children be designers?

ACTIVITY: A to B to C to D

■ ATL

- Creative-thinking skills: Create original works and ideas; use existing works and ideas in new ways

Show your client’s initial drawing, your first sketches, final sketch and then your final product. **Describe** the main changes and differences between the client’s drawing and the final product. Make sure you **justify** any changes you made. Remember that the design situation focuses on you using and developing your design skills, so this should be included in your justification for developments you made to the client’s initial drawing.

Client’s drawing	Initial sketches	Final sketch	Final product
Describe the main differences from the client’s drawing to the final product:			

■ **Table 12.1** Showing the progression from the client’s drawing to the final product

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion C iii: Follow the plan to create a solution and C iv: Justify changes made to the plan.

ACTIVITY: Get making

■ ATL

- Communication skills: Organize and depict information logically

As you **create** your product, take photographs or screenshots to show off the process. An element of the **design situation** for this project is that you are using and strengthening your skills as a designer, so make sure this is evidenced in your documentation. Make sure you show the range of tools, techniques and equipment you used to **create** a high-quality final product. You should also show off any safety measures you followed. You might also choose to show these images to your client so they can see how you transformed their drawing into the final product.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion C ii: Demonstrate technical skills.



ACTIVITY: Testing my product

■ ATL

- Critical-thinking skills: Practise observing carefully in order to recognize problems

There are two types of tests you should **develop** for this product.

- 1 Basic physical tests you can perform before you give the client the product, which should include testing that your product is safe. These will help you measure the first type of specifications you wrote – the list of practical features your product must have. If you **identify** any problems related to safety, you will have to adjust your product before giving it to your client.

- 2 Tests that encourage the user to interact with the product, so you can see how successful it was. You must use observation or a user trial for this. These will help you assess the second type of specifications you had, the aspirational ones, which have the biggest impact on your client. Although you are only making a one-off product for an individual client, it is still important to **identify** problems the product has so you can **describe** how you would improve it if you remade it.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion D i: Develop testing methods.

ACTIVITY: Rose, thorn and bud

■ ATL

- Critical-thinking skills: Revise understanding based on new information and evidence

Use the data gathered from your feedback to **evaluate** the success of your product and to **identify** ways it could be improved using the technique 'rose, thorn and bud'.



Rose: Describe the success of your product. What worked well?

Thorn: Describe any problems your product has. Something that didn't work well.

Bud: Describe any new ideas generated by making and testing your product. What would you do next time?

- **Figure 12.21** A technique to evaluate and improve a design

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion D ii: Evaluate the success of a solution and D iii: Explain how to improve the solution.

DISCUSS

Throughout this project you worked very closely with your client, a child. Your final product is even based on a drawing they created. Consider the role the child played – were they more collaborator or client? What could have been made without your client being involved? What could have been made without your involvement?

Finally, consider the question: 'Can children be designers?'



ACTIVITY: What impact did you make?

■ ATL

- Collaboration skills: Help others to succeed

Lastly, **describe** the impact you made on your client. You can consider the impact that the final product had on them, as well as the process. Did their involvement make them enjoy the final product more? Did working with a teenager benefit them? Did the experience change their view of what a designer is or their role in design? Finally, looking at the problems you identified that your client might face, how did the product and the process help them with this problem?

EXTENSION

Consider developing your design skills further through doing an online course or through making more products. Self-identifying an area of interest and passion is important and might lead to courses you take after the MYP, at university or even for a career.

In this chapter many of the examples of existing products you saw were made by individuals, selling on platforms like Etsy. Consider using your design skills to start a business or bring a product to market.

If you focused on toy design, look at this guide from the Toy Association:

www.toyassociation.org/App_Themes/tia/pdfs/resources/inventors/TIAToyInventorDesignerGuide.pdf

! Take action

- ! Consider other ways you might volunteer your time or skills to support local children. You might want to reach out to a local youth centre, hospital or children's charity.
- ! If you focused on toy design, consider making worry eaters. These are small plush toys with a zipped mouth. Children can write their worries on paper then 'feed' it to the worry eater. They are quick and easy to make, so you could create a club or event to make them, then sell or donate them.
- ! Examples of worry eaters – Sorgen Fresser: <https://sorgenfresser.com/en/die-sorgenfresser>

Reflection

In this chapter we found out about how children express themselves. We explored the benefits, to children, of creative expression. We took action by turning a child’s imaginative drawing into a product.

Use this table to reflect on your own learning in this chapter.					
Questions we asked	Answers we found	Any further questions now?			
Factual: What strategies can we use to help children express themselves?					
Conceptual: How can we show that we understand someone else’s perspective?					
Debatable: Can children be designers? Does artistic expression help childhood development?					
Approaches to Learning you used in this chapter:	Description – what new skills did you learn?	How well did you master the skills?			
		Novice	Learner	Practitioner	Expert
Communication skills					
Collaboration skills					
Organization skills					
Reflection skills					
Information literacy skills					
Critical-thinking skills					
Creative-thinking skills					
Learner profile attribute(s)	Reflect on the importance of being knowledgeable for your learning in this chapter.				
Knowledgeable					

Glossary

aesthetics Aesthetics deals with the characteristics, creation, meaning and perception of beauty and taste. The study of aesthetics develops skills for the critical appreciation and analysis of art, culture and nature.

audit An inspection used to gather facts.

authentic tests The tests are relevant to the project and are completed by appropriate testers to gain high-quality quantitative and qualitative feedback.

brief A design brief is a summary of a project you are going to make for your client/target audience.

CAD Computer-aided design. This is computer software that is used for creating both 2-D and 3-D designs.

client The person you are designing for. They might not always be the end-user for your product, as they could be a company or individual asking a designer to create something for someone else.

colour palette A range of selected colours you will use for a project.

copy The exact text that will be used.

CRAAP test A tool for evaluating a source, focusing on currency, relevancy, authority, accuracy and purpose.

design situation The context for which you are designing (linking to the problem you are solving).

durability A product that is durable will last longer, usually because of the materials it is made from or how it is made.

elevator pitch A short presentation to pitch your project – usually around a minute long – the length of time you might spend with someone in an elevator.

expert appraisal A type of product testing that relies on the knowledge of an expert in the operation of a product. This can include interviewing an expert, beta testing and consumer testing.

feedback Reactions to your product, including what people like, dislike and what they would change.

field test A type of product testing that tests the performance of a new product under the conditions in which it will be used; it normally focuses on aspects of functionality (durability, robustness, suitability to its environment, and so on).

functionality How well a product suits its purpose and how it does so.

impact How your product affects something or someone.

impact mapping An organizational technique used when creating a product or service, focusing on the intended impact.

innovation Innovation is the successful diffusion of an invention into the marketplace. An altered interpretation or the experimentation of ideas, techniques and media. It ensures originality and creativity by new ways of presenting ideas and unusual use of media. The invention of new functions and ways of working.

mock-up A model, replica or prototype of a product.

orthographic drawings Drawings of 3-D products shown in a series of 2-D visuals, so the object can be viewed from multiple sides.

performance test An evaluation of the actual performance of a product within the task or learning objective using the conditions under which it will be performed and the absolute standard for acceptable performance.

pitch When you present your product idea to another person, usually to the intended client or target audience.

product testing A stage in the design process where versions of products (for example, prototypes) are tested against the design need (specification), applied to the context and presented to the end-user or target audience. These tests may include the collection and analysis of data.

prototype A rough model of a product, usually created to get feedback or perform initial testing on.

robustness The quality of being strong and long lasting.

specification A specific requirement that a product should/does have.

testing A way to measure the success or failure of a product through gathering feedback and other evidence.

unique selling point (USP) What makes a product special or different from its competitors.

user experience (UX) How a user interacts with a product.

user interface (UI) The space where a user interacts with a product.

user trial A type of product test carried out by allowing the target market to interact with the product/solution.

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Photo credits

Note: *t* top; *m* middle; *b* bottom; *l* left; *r* right

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